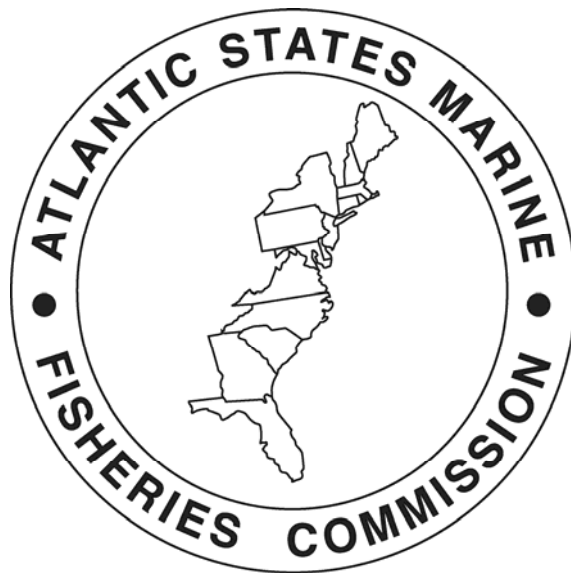


Atlantic States Marine Fisheries Commission

Draft Interstate Fishery Management Plan for Atlantic Migratory Group Cobia



**ASMFC Vision Statement:
Sustainably Managing Atlantic Coastal Fisheries**

August 2017

Draft Interstate Fishery Management Plan for Atlantic Migratory Group Cobia

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

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

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

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

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TABLE OF CONTENTS

| | | |
|--------|-----------------------------------------------------------------------------------------|----|
| 1. | INTRODUCTION | 6 |
| 1.1. | BACKGROUND INFORMATION | 6 |
| 1.1.1. | Statement of the Problem | 6 |
| 1.1.2. | Benefits of Implementation | 7 |
| 1.2. | DESCRIPTION OF THE RESOURCE..... | 8 |
| 1.2.1. | Species Life History | 8 |
| 1.2.2. | Stock Assessment Summary | 9 |
| 1.2.3. | Abundance and Present Condition | 10 |
| 1.3. | DESCRIPTION OF THE FISHERY | 10 |
| 1.3.1. | Commercial Fishery..... | 10 |
| 1.3.2. | Recreational Fishery..... | 14 |
| 1.3.3. | Subsistence Fishery..... | 21 |
| 1.3.4. | Non-Consumptive Factors | 21 |
| 1.3.5. | Interactions with Other Fisheries, Species, or Users | 21 |
| 1.4. | HABITAT CONSIDERATIONS..... | 21 |
| 1.4.1. | Habitat Important to the Stocks | 21 |
| 1.4.2. | Identification and Distribution of Habitat and Abitat Areas of Particular Concern | 24 |
| 1.4.3. | Present Condition of Habitats and Habitat Areas of Particular Concern | 25 |
| 1.5. | IMPACTS OF THE FISHERY MANAGEMENT | 28 |
| 1.5.1. | Biological and Environmental Impacts | 28 |
| 1.5.2. | Social Impacts | 28 |
| 1.5.3. | Other Resource Management Efforts..... | 29 |
| 1.6. | LOCATION OF TECHNICAL DOCUMENTATION FOR FMP | 30 |
| 1.6.1. | Review of Resource Life History and Biological Relationships | 30 |
| 1.6.2. | Stock Assessment Document..... | 30 |
| 1.6.3. | Economic Assessment Document..... | 30 |
| 1.6.4. | Law Enforcement Assessment Document | 30 |
| 2. | GOALS AND OBJECTIVES..... | 31 |
| 2.1. | HISTORY AND PURPOSE OF THE PLAN | 31 |
| 2.1.1. | History of Prior Management Actions | 31 |
| 2.1.2. | Purpose and Need for Action..... | 31 |
| 2.2. | GOAL..... | 32 |
| 2.3. | OBJECTIVES..... | 32 |
| 2.4. | SPECIFICATION OF MANAGEMENT UNIT..... | 32 |

| | | |
|--------|-------------------------------------------------------------|----|
| 2.4.1. | Management Areas..... | 32 |
| 2.5. | DEFINITION OF OVERFISHING..... | 32 |
| 2.6. | STOCK REBUILDING PROGRAM | 32 |
| 3. | MONITORING PROGRAM SPECIFICATIONS/ELEMENTS | 33 |
| 3.1. | ASSESSMENT OF ANNUAL RECRUITMENT..... | 33 |
| 3.2. | ASSESSMENT OF SPAWNING STOCK BIOMASS..... | 33 |
| 3.3. | ASSESSMENT OF FISHING MORTALITY TARGET AND MEASUREMENT..... | 33 |
| 3.4. | SUMMARY OF MONITORING PROGRAMS..... | 34 |
| 3.4.1. | Catch, Landings, and Effort Information..... | 34 |
| 3.4.2. | Biological Information..... | 36 |
| 3.4.3. | Social and Economic Information | 36 |
| 3.4.4. | Observer Programs | 37 |
| 3.5. | STOCKING PROGRAM | 37 |
| 3.6. | BYCATCH REDUCTION PROGRAM | 38 |
| 3.7. | HABITAT PROGRAM..... | 38 |
| 4. | MANAGEMENT PROGRAM IMPLEMENTATION..... | 38 |
| 4.1. | RECREATIONAL FISHERIES MANAGEMENT MEASURES..... | 39 |
| 4.1.1. | Size Limits..... | 39 |
| 4.1.2. | Bag Limits | 39 |
| 4.1.3. | Vessel Limits..... | 39 |
| 4.1.4. | Season and Allocation Options | 39 |
| 4.2. | COMMERCIAL FISHERIES MANAGEMENT MEASURES..... | 43 |
| 4.2.1. | Size Limits..... | 43 |
| 4.2.2. | Possession Limits | 43 |
| 4.3. | HABITAT CONSERVATION AND RESTORATION | 43 |
| 4.3.1. | Threats to Cobia Habitat..... | 43 |
| 4.3.2. | Recommendations | 43 |
| 4.4. | ALTERNATIVE STATE MANAGEMENT REGIMES..... | 45 |
| 4.4.1. | General Procedures | 45 |
| 4.4.2. | Management Program Equivalency..... | 45 |
| 4.4.3. | De minimis Fishery Guidelines..... | 45 |
| 4.5. | ADAPTIVE MANAGEMENT | 46 |
| 4.5.1. | General Procedures | 46 |
| 4.5.2. | Measures Subject to Change | 47 |
| 4.6. | EMERGENCY PROCEDURES..... | 47 |
| 4.7. | MANAGEMENT INSTITUTIONS | 48 |
| 4.7.1. | ASMFC and the ISFMP Policy Board..... | 48 |

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| | | |
|--------|------------------------------------------------------------------------------------------------|----|
| 4.7.2. | South Atlantic State/Federal Fisheries Management Board | 48 |
| 4.7.3. | Cobia Plan Development Team / Plan Review Team..... | 48 |
| 4.7.4. | Technical Committee | 49 |
| 4.7.5. | Stock Assessment Subcommittee | 49 |
| 4.7.6. | Advisory Panel..... | 49 |
| 4.7.7. | Federal Agencies | 49 |
| 4.8. | RECOMMENDATIONS TO THE SECRETARIES FOR COMPLEMENTARY ACTIONS IN FEDERAL JURISDICTIONS | 51 |
| 4.9. | COOPERATION WITH OTHER MANAGEMENT INSTITUTIONS..... | 51 |
| 5. | COMPLIANCE | 51 |
| 5.1. | MANDATORY COMPLIANCE ELEMENTS FOR STATES | 51 |
| 5.1.1. | Mandatory Elements of State Programs | 52 |
| 5.1.2. | Compliance Schedule..... | 53 |
| 5.1.3. | Compliance Reporting Content..... | 54 |
| 5.2. | PROCEDURES FOR DETERMING COMPLIANCE | 54 |
| 5.3. | RECOMMENDED (NON-MANDATORY) MANAGEMENT MEASURES | 55 |
| 5.4. | ANALYSIS OF ENFORCEABILITY OF PROPOSED MEASURES..... | 55 |
| 6. | MANAGEMENT AND RESEARCH NEEDS | 55 |
| 6.1. | STOCK ASSESSMENT AND POPULATION DYNAMICS | 55 |
| 6.2. | RESEARCH AND DATA NEEDS | 55 |
| 6.2.1. | Biological..... | 55 |
| 6.2.2. | Social | 56 |
| 6.2.3. | Economic..... | 56 |
| 6.2.4. | Habitat | 56 |
| 6.2.5. | State-specific..... | 56 |
| 7. | PROTECTED SPECIES | 57 |
| 7.1. | MARINE MAMMAL PROTECTION ACT (MMPA) REQUIREMENTS | 57 |
| 7.2. | ENDANGERED SPECIES ACT (ESA) REQUIREMENTS..... | 58 |
| 7.3. | MIGRATORY BIRD TREATY ACT (MBTA) REQUIREMENTS..... | 58 |
| 7.4. | PROTECTED SPECIES WITH POTENTIAL FISHERY INTERACTIONS | 59 |
| 7.5. | PROTECTED SPECIES INTERACTIONS WITH EXISTING FISHERIES | 62 |
| 7.5.1. | Brief overview of the Cobia fishery and gears used | 62 |
| 7.5.2. | Marine Mammals..... | 63 |
| 7.5.3. | Sea Turtles..... | 63 |
| 7.5.4. | Sturgeon, smalltooth sawfish, Nassau grouper | 65 |
| 7.5.5. | Seabirds..... | 65 |

DRAFT DOCUMENT FOR BOARD DISCUSSION; NOT FOR PUBLIC COMMENT

| | | |
|--------|--------------------------------------------------------------------------------------------|----|
| 7.6. | POPULATION STATUS REVIEW OF RELEVANT PROTECTED SPECIES..... | 66 |
| 7.6.1. | Marine Mammals..... | 66 |
| 7.6.2. | Sea Turtles..... | 66 |
| 7.6.3. | Sturgeon, smalltooth sawfish, and Nassau grouper..... | 66 |
| 7.6.4. | Seabirds..... | 67 |
| 7.7. | EXISTING AND PROPOSED FEDERAL REGULATIONS/ACTIONS PERTAINING TO RELEVANT PROTECTED SPECIES | 68 |
| 7.7.1. | Marine Mammals..... | 68 |
| 7.7.2. | Sea turtles | 69 |
| 7.7.3. | Sturgeon, smalltooth sawfish, and Nassau grouper..... | 69 |
| 7.7.4. | Seabirds..... | 70 |
| 7.8. | POTENTIAL IMPACTS TO ATLANTIC COASTAL STATE AND INTERSTATE FISHERIES | 71 |
| 7.9. | IDENTIFICATION OF CURRENT DATA GAPS AND RESEARCH NEEDS | 71 |
| 7.9.1. | General Bycatch Related Research Needs..... | 71 |
| 7.9.2. | Marine Mammals..... | 72 |
| 7.9.3. | Sea Turtles..... | 72 |
| 7.9.4. | Sturgeon..... | 73 |
| 7.9.5. | Sawfish | 74 |
| 7.9.6. | Seabirds..... | 74 |
| 8. | REFERENCES..... | 75 |
| 9. | APPENDICES..... | 75 |

1. INTRODUCTION

1.1. BACKGROUND INFORMATION

At the August 2016 meeting of the Interstate Fishery Management Program (ISFMP) Policy Board, Commissioners expressed an interest in developing an Interstate Fishery Management Plan (FMP) complementary to the South Atlantic Fishery Management Council (SAFMC) Coastal Migratory Pelagics (CMP) FMP for cobia (*Rachycentron canadum*). Concerns were raised because the Annual Catch Limits (ACL) established by the SAFMC were being exceeded and fishery closures were resulting in disproportionate impacts to member states. A concern with future stock status due to ACL overages and the need for state specific involvement in management precipitated the development of an interstate FMP. Based on current genetic data, the management unit for this FMP are the Atlantic Migratory Group cobia that range from Georgia through New York. After a review of the available information developed by staff, the South Atlantic State/Federal Fisheries Management Board recommended initiation of an FMP. Upon review of the report, the ISFMP Policy Board voted to initiate the FMP and assigned its development and administration to the South Atlantic State/Federal Management Board (Management Board), which administers the FMPs for Atlantic croaker, black drum, red drum, Spanish mackerel, spot, and spotted seatrout.

The Management Board initiated development of an FMP for Atlantic Migratory Group (Atlantic) cobia in August 2016 and approved the Public Information Document for public comment in November 2016. Public comment was received and hearings held in December 2016, and the Management Board tasked the Plan Development Team (PDT) with developing a Draft FMP for Atlantic cobia in February 2017. A progress report was provided to the Management Board in May 2017. The Management Board discussed future management options and approved a letter to the SAFMC and GMFMC requesting a full transfer of management authority to the ASMFC. At their June, 2017, meeting in Ponte Vedra, FL, the SAFMC voted to begin developing an amendment to the CMP FMP to consider the transfer. At the same meeting, an emergency action to restore the Atlantic cobia stock boundary to include the east coast of Florida was not approved, leaving the current stock boundary from Georgia through New York.

1.1.1. Statement of the Problem

Cobia management has historically been considered precautionary through the CMP FMP. Both sectors of the fishery have been managed with a 2 fish possession limit and 33" fork length (FL) minimum size since formal management began in Amendment 6 to the CMP FMP in 1990. The ACLs and Accountability Measures (AM) were established through Amendment 18 (GMFMC/SAFMC 2012). The 2013 stock assessment conducted through the Southeast Data Assessment and Review (SEDAR) process indicated overfishing was not occurring and that the stock was not overfished, although biomass has been trending steadily downward over the previous two decades. Additionally, the stock assessment used a new stock boundary (Georgia

through New York), which was implemented into the FMP along with the updated ACLs in Amendment 20B (GMFMC/SAFMC 2014). The current ACL is a precautionary approach to prevent the stock from reaching an overfished status. The recent overages of the ACL in 2015 and 2016 significantly exceeded the SAFMC's defined Overfishing Limit. Further quota overages could result in overfishing and lead to the stock becoming overfished.

Efforts to more closely monitor state specific harvest to ensure that the federal ACL is not exceeded and avoid overfishing is the Commission's primary focus. Further, by developing a Commission plan, the impacts of a single, federal closure may be mitigated through state-specific measures designed to maintain traditional seasons at reduced harvest rates. The proposed interstate FMP considers potential management measures to maintain a healthy resource while minimizing the socio-economic impacts of seasonal closures.

1.1.2. Benefits of Implementation

1.1.2.1. Social and Economic Benefits

Sustainable management practices and policies for a moderately-lived species such as cobia can increase economic benefits and provide social stability in the fishing community while ensuring a fishery for future generations. Greater cooperation and uniform management measures among the states ensure that the conservation efforts of one state or group will not be undermined or that one state is not disadvantaged over another.

Historically, the commercial market has been a bycatch fishery due to low possession limits of 2 fish per person. Directed harvest, even at these low limits, appears to be increasing. Cobia are primarily caught as bycatch in nearshore to offshore trolling and hook and line commercial fisheries that target snapper/grouper and king mackerel. Cobia are considered excellent table fare and command a high price for the fishermen and fish houses when they are seasonally available.

The recreational fishing season primarily occurs from May through August, but may begin as early as April and typically extends into September in the Mid-Atlantic region. Atlantic cobia support a significant for-hire fishery and lure manufacturing businesses.

The recreational fishery and landings far exceed the commercial fishery and management has deemed the recreational fishery as the primary goal in management.

1.1.2.2. Ecological Benefits

Consistent management goals across jurisdictions can provide greater protections to a migratory stock. Cobia are moderately lived and can have multiple opportunities to contribute to the population if allowed to reach older ages, which can be afforded by regulatory protections across the range of the population and age classes.

Concern that the peak fishery occurs during the spawning season has resulted in at least one state (South Carolina) implementing a closure during that time.

1.2. DESCRIPTION OF THE RESOURCE

1.2.1. Species Life History

Cobia are a member of the family Rachycentridae and has historically been managed in the SAFMC CMP FMP because of its migratory behavior. Cobia are distributed worldwide in tropical, subtropical and warm-temperate waters. In the western Atlantic it occurs from Nova Scotia, Canada, south to Argentina, including the Caribbean Sea. They are abundant in warm waters off the coast of the U.S. from the Chesapeake Bay south and throughout the Gulf of Mexico (Gulf). Cobia prefer water temperatures between 68-86°F. As a pelagic fish, cobia are found over the continental shelf as well as around offshore natural and artificial reefs. Cobia frequently reside near any structure that interrupts the open water such as pilings, buoys, platforms, anchored boats, and flotsam, and are often seen under or accompanying rays, large coastal sharks, and sea turtles. Cobia are also found inshore inhabiting bays, inlets, and mangroves.

Cobia form large aggregations, spawning during daylight hours between June and August in the Atlantic Ocean near the Chesapeake Bay and off North Carolina in May and June, and in the Gulf during April through September. Spawning frequency is once every 9-12 days, spawning 15-20 times during the season. During spawning, cobia undergo changes in body coloration from brown to a light horizontal-striped pattern, releasing eggs and sperm into offshore open water. Cobia have also been observed spawning in estuaries and shallow bays with the young heading offshore soon after hatching. Cobia eggs are spherical, averaging 1.24 mm in diameter. Larvae are released approximately 24-36 hours after fertilization.

Newly hatched larvae are 2.5 mm (1 inch) long and lack pigmentation. Five days after hatching, the mouth and eyes develop, allowing for active feeding. A pale yellow streak is visible, extending the length of the body. By day 30, juveniles take on the appearance of adult cobia with two color bands running from the head to the posterior end.

Weighing up to a record 61 kg (135 pounds whole weight [lbs ww]), cobia are more common at weights of up to 23 kg (50 lbs ww). They reach lengths of 50-120 cm (20-47 inches), with a maximum of 200 cm (79 inches). Cobia grow quickly and have a moderately long life span. Maximum ages observed for cobia in the Gulf were 9 and 11 years for males and females, respectively, while off North Carolina maximum ages were 14 and 13 years, respectively. Females reach sexual maturity at 3 years of age and males at 2 years in the Chesapeake Bay region. During autumn and winter months, cobia presumably migrate south and offshore to warmer waters. In early spring, migration occurs northward along the Atlantic coast. Significant efforts are currently underway using various tagging methods to better understand the migratory behavior of cobia.

1.2.2. Stock Assessment Summary

1.2.2.1. Stock Identification and Management Unit

Microsatellite-based analyses demonstrated that tissue samples collected from North Carolina, South Carolina, east coast Florida (near St. Lucie), Mississippi, and Texas showed disparate allele frequency distributions, and subsequent analysis of molecular variance showed population structuring occurring between the states (Darden et al. 2014). Results showed that the Gulf of Mexico stock appeared to be genetically homogeneous and that a segment of the population continued around the Florida peninsula to St. Lucie, FL, with a genetic break somewhere between St. Lucie, FL, and Port Royal Sound, SC. However, no samples were available from Cape Canaveral, FL, to Hilton Head Island, SC. Tag-recapture data using conventional dart tags also suggested two stocks of fish that overlap at Brevard County, FL, corroborating the genetic findings.

The Atlantic and Gulf stocks were separated at the Florida-Georgia line during SEDAR 28 because genetic data suggested that the split is north of the Brevard/Indian River County line and tagging data did not dispute this split. The FL-GA line was selected as the stock boundary based on recommendations from the commercial and recreational work groups and comments that this boundary would allow easier management and did not conflict with the life history information available. However, there was not enough resolution in the genetic or tagging data to suggest that a biological stock boundary exists specifically at the FL-GA line, only that a mixing zone occurs around Brevard County, FL, and potentially to the north. The Atlantic stock was determined to extend northward, as far as New York.

Several ongoing research projects are expanding sample collection throughout coastal Georgia and northern Florida, which may help provide better resolution for where the genetic break (or mixing zone) between the Gulf of Mexico population and the Atlantic population occurs. In addition, a few hundred cobia have been tagged with acoustic tags in South Carolina, Georgia, and the east coast of Florida to evaluate movement patterns along the South Atlantic (FL-NC) coast of the United States. This may also help determine where the stock boundary/mixing zone occurs.

1.2.2.2. SEDAR 28

The Gulf and Atlantic migratory groups of cobia were assessed by SEDAR 28 in 2013. The SEDAR 28 stock assessment for Atlantic migratory group cobia (Atlantic cobia) determined that the stock is not overfished or experiencing overfishing. The Gulf of Mexico Fishery Management Council (GMFMC) Scientific and Statistical Committee's (SSC) review of the SEDAR 28 stock assessment of Gulf migratory group cobia (Gulf cobia) determined that the stock was not overfished or experiencing overfishing.

1.2.3. Abundance and Present Condition

No coastwide index of abundance is available for cobia and no reliable regional indices of abundance can be generated due to lack of targeted monitoring programs and low incidental catch of cobia in most existing surveys. In particular, few surveys consistently encounter and sample adult fish due to their size and gear avoidance in primary survey methods such as trawls.

1.3. DESCRIPTION OF THE FISHERY

1.3.1. Commercial Fishery

Prior to 2015, the SAFMC’s management area for Atlantic cobia extended from the east coast of Florida through New York. As implemented through Amendment 20B (GMFMC/SAFMC 2014) and effective in 2015, the harvests of cobia off the east coast of Florida have been considered part of the Gulf migratory group, thus the current management area for Atlantic cobia extends from Georgia through New York. The tables presented below include cobia landings and revenues from Georgia through New York, and thus exclude those from Florida. In this way, reported landings and revenues for 2010 through 2014 are consistent with those for 2015 under the new geographic designation of Atlantic cobia.

Three important issues should be recognized regarding the commercial landings data for Atlantic cobia presented in Tables 1 and 2. First, Table 1 shows 2015 landings in landed weight, while Table 2 shows 2010-2015 landings in whole weight. The Atlantic cobia ACL is specified and monitored in terms of landed weight (“as reported”), which is generally a combination of gutted and whole weight. This means landings in gutted weight are not converted to whole weight, or vice-versa, but landings in whole or gutted weight are simply added together to track landings against the ACL. The Atlantic Coastal Cooperative Statistics Program (ACCSP), which is a major data source for cobia (and other Atlantic species) landings, reports commercial landings in whole weight but may be converted to gutted weight using a conversion factor. However, the ACCSP is not currently able to provide landed weight. Second, the 2015 data shown in the tables is preliminary, but a more recent update has been made by the Southeast Fisheries Science Center (SEFSC). The updated 2015 Atlantic cobia commercial landings were 71,790 lbs landed weight (Table 1). This number is lower than that shown in the tables and is also in landed weight, not whole weight. Third, landings prior to 2015 cannot be directly converted to landed weight. However, the commercial ACL (quota) prior to 2015 was monitored in terms of whole weight. Also, commercial quotas were not instituted until 2011.

Table 1. Updated 2015 commercial landings (pounds landed weight [lw]) and revenues (2014 \$).

| States | | | | |
|--------------------|----------|-----------|----------|-----------|
| | GA/SC | NC | VA | Total |
| Pounds (lw) | 3,219 | 42,338 | 26,233 | 71,790 |
| Revenues (2014 \$) | \$28,755 | \$113,052 | \$75,394 | \$217,200 |

Source: D. Gloeckner (pers. comm., 2016) for 2015 data.

From 2010 through 2015, annual commercial landings of Atlantic cobia ranged from approximately 33,000 to 83,000 lbs ww (Table 2). Dockside revenues from those landings ranged from approximately \$79,000 to \$233,000 (2014 \$) (Table 2). The average dockside price for those six years was \$2.43 per lb ww (2014 \$). The highest landings and revenues occurred in 2015, whereas the lowest for both landings and revenues occurred in 2011. When the Florida east coast zone was still part of the management area for Atlantic cobia, commercial harvest reached the sector's quota of 125,712 lbs ww in 2014 and closed on December 11, 2014. Under the modified management area, excluding the Florida east coast zone, the quota for Atlantic cobia was revised to 60,000 lbs landed weight (lw) in 2015 and 50,000 lbs lw in 2016 and thereafter. Although landings exceeded the 2015 quota, no quota closure was imposed. Preliminary commercial landings for 2016 are 48,690 lbs lw (SEFSC Quota Monitoring Program; July, 2017). The federal commercial fishery closed on December 6, 2016.

Commercial landings of Atlantic cobia have predominantly come from North Carolina, followed by Virginia and South Carolina/Georgia (Table 2). Georgia and South Carolina landings are combined for confidentiality purposes because of the relatively small amount of cobia landings in Georgia. Cobia landings north of Virginia are relatively rare and sporadic, thus, Virginia is considered the northernmost major contributor to the commercial Atlantic cobia fishery. One notable feature for Virginia is the surge in landings in 2014 and 2015, although they were still lower than landings in North Carolina.

Table 2. Commercial Atlantic cobia landings (lbs ww) and revenues (2014 \$) by state/area, 2010-2015 (preliminary). Georgia landings are very small, so they are combined with those of South Carolina.

| | GA/SC | NC | VA | Total |
|---------|-----------------------------|-----------|----------|-----------|
| | Pounds (ww) | | | |
| 2010 | 3,174 | 43,737 | 9,364 | 56,275 |
| 2011 | 4,610 | 19,950 | 9,233 | 33,793 |
| 2012 | 3,642 | 32,008 | 6,309 | 41,959 |
| 2013 | 4,041 | 35,496 | 13,095 | 52,632 |
| 2014 | 4,180 | 41,848 | 23,111 | 69,139 |
| 2015 | 3,555 | 52,315 | 27,277 | 83,148 |
| Average | 3,867 | 37,559 | 14,732 | 56,158 |
| | Dockside Revenues (2014 \$) | | | |
| 2010 | \$11,377 | \$70,377 | \$19,976 | \$101,730 |
| 2011 | \$19,666 | \$37,893 | \$21,666 | \$79,224 |
| 2012 | \$15,554 | \$66,887 | \$14,597 | \$97,038 |
| 2013 | \$15,639 | \$79,397 | \$35,792 | \$130,828 |
| 2014 | \$13,320 | \$95,462 | \$67,972 | \$176,754 |
| 2015 | \$11,151 | \$147,160 | \$75,360 | \$233,672 |
| Average | \$14,451 | \$82,863 | \$39,227 | \$136,541 |

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Source: SEFSC Commercial ACL Dataset (December 2015) for 2010-2014 data; D. Gloeckner (pers. comm., 2016) for 2015 data.

Commercial fishermen harvest cobia using various gear types. Table 3 shows commercial Atlantic cobia landings and revenues by gear type. In Table 3, “Hook and Line” includes handline, longline, power-assisted line, and troll line while “Others” includes traps, other net gear, dredges/gigs/spears, and unclassified gear. Handline has been the foremost gear type used in harvesting cobia for most years (Table 3), followed closely by gillnets. Within the “Others” category, the largest landings were assigned to “unclassified gear.” Although not shown in the table, handline accounted for the biggest share of the hook and line landings. Longline has been a minor gear type in the commercial harvest of cobia.

Table 3. Commercial Atlantic cobia landings (lb ww) and revenues (2014\$) by gear, 2010-2015 (preliminary).

| | Hook and Line | Gillnets | Others | Total |
|---------|-----------------------------|-----------|----------|-----------|
| | Pounds (ww) | | | |
| 2010 | 26,758 | 23,495 | 6,022 | 56,275 |
| 2011 | 18,322 | 9,177 | 6,294 | 33,793 |
| 2012 | 12,962 | 21,091 | 7,906 | 41,959 |
| 2013 | 28,356 | 13,343 | 10,933 | 52,632 |
| 2014 | 37,082 | 23,540 | 8,517 | 69,139 |
| 2015 | 37,702 | 36,417 | 9,030 | 83,148 |
| Average | 26,864 | 21,177 | 8,117 | 56,158 |
| | Dockside Revenues (2014 \$) | | | |
| 2010 | \$49,095 | \$38,605 | \$14,030 | \$101,730 |
| 2011 | \$39,265 | \$18,242 | \$21,717 | \$79,224 |
| 2012 | \$29,677 | \$43,875 | \$23,486 | \$97,038 |
| 2013 | \$69,433 | \$30,206 | \$31,189 | \$130,828 |
| 2014 | \$99,959 | \$55,275 | \$21,520 | \$176,754 |
| 2015 | \$108,165 | \$100,130 | \$25,377 | \$233,672 |
| Average | \$65,932 | \$47,722 | \$22,886 | \$136,541 |

Source: SEFSC Commercial ACL Dataset (December 2015) for 2010-2014 data; D. Gloeckner (pers. comm., 2016) for 2015 data.

1.3.1.1. State-specific Commercial Fishery

Georgia

There is no directed commercial fishery for cobia in Georgia. Commercial landings may occur but they are typically the result of bycatch in other targeted fisheries. Some illegal sale of recreationally-caught cobia may occur; however, the total amount and value is relatively small. The greatest recorded landings in Georgia (since annual landings became available in 1979) occurred in 1993 when 2,730 pounds of cobia were landed resulting in a market value of \$4,728.

South Carolina

There is a limited commercial fishery for cobia in South Carolina. Cobia are a state-designated Gamefish, and as such, cobia landed in state waters may not be sold commercially. However, cobia landed in Federal waters can be sold commercially under current regulations. Commercial cobia landings have ranged from 2,000-4,300 lbs per year with an annual mean of 3,207 lbs per year for 2005-2016 and dollar values ranging from \$4,731-\$17,795 annually.

North Carolina:

Commercial landings of cobia in North Carolina are available from 1950 to the present. However, monthly landings are not available until 1974. North Carolina instituted mandatory reporting of commercial landings through their Trip Ticket Program, starting in 1994. Landings information collected since 1994 are considered the most reliable. The primary fisheries associated with cobia in North Carolina are the snapper-grouper, coastal pelagic troll, and the large mesh estuarine gill net fisheries. Cobia landings from 1950 – 2016 have ranged from a low of 600 pounds (1951; 1955) to a high of 52,684 pounds (2015) with average landings of 16,611 pounds over the 66-year time series (Table 3). Recently, landings have ranged from 19,004 pounds (2007) to 52,684 pounds (2015), averaging 34,674 pounds over the last ten years.

The primary commercial gear used to harvest cobia has changed over time. This is most likely due to changing fisheries and the fact that it is mostly considered a marketable bycatch fishery, especially after North Carolina adopted the CMP FMP measures of 33-inches minimum FL and two-per person possession limit in 1991. From 1950 to the late 1970s, cobia were mostly landed out of the haul seine fishery. Most landings that occurred during the 1980s came from the pelagic troll and hand line fishery with modest landings from the haul seine and anchored gill net fishery. From 1994-2016, the majority of landings have occurred from the anchored gill net and pelagic troll and hand line fishery with gill nets being the top gear during most of those years.

Virginia

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

Virginia has had variable commercial landings of cobia since the Virginia Marine Resources Commission instituted mandatory reporting in 1993, with landings being high in the mid-1990s, lower in the mid-2000s, and peaking in the past three years (2014-2016; Appendix II, Table VA1). There is a small, but directed hook-and-line fishery, with mainly bycatch landings from gillnets and pound nets, although these landings can be sizable (Appendix II, Table VA2). The “Other” category is predominantly gillnet landings, but they were combined with other gears for confidentiality purposes. Hook-and-line landings have been the largest, by gear, since 2007.

1.3.2. Recreational Fishery

The recreational sector is comprised of a private component and a for-hire component. The private component includes anglers fishing from shore (including all land-based structures) and private/rental boats. The for-hire component is composed of charter boats and headboats (also called partyboats). Although charter boats tend to be smaller, on average, than headboats, the key distinction between the two types of operations is how the fee is typically determined. On a charter boat trip, the fee charged is for the entire vessel, regardless of how many passengers are carried, whereas the fee charged for a headboat trip is paid per individual angler.

1.3.2.1. Permits

A federal charter/headboat (for-hire) vessel permit is required for harvesting CMP species, including cobia, when fishing on for-hire vessels. The South Atlantic for-hire permit is an open access system. As of May 16, 2016, there were 1,494 valid (non-expired) or renewable Atlantic charter/headboat CMP permits. A renewable permit is an expired permit that may not be actively fished, but is renewable for up to one year after expiration. Although the for-hire permit application collects information on the primary method of operation, the resultant permit itself does not identify the permitted vessel as either a headboat or a charter boat and does not restrict operation as either a headboat or charter boat, thus, vessels may operate in both capacities. However, only selected headboats are required to submit harvest and effort information to the National Marine Fisheries Service (NMFS) Southeast Region Headboat Survey (SRHS). Participation in the SRHS is based on determination by the SEFSC that the vessel primarily operates as a headboat. There were 73 South Atlantic vessels registered in the SRHS as of February 22, 2016 (K. Fitzpatrick, NMFS SEFSC, pers. comm.).

Information on South Atlantic charter boat and headboat operating characteristics, including average fees and net operating revenues, as reported in Holland et al. (2012), and financial and economic impact information on Southeast (FL-NC) for-hire vessels, as reported in Steinback and Brinson (2013), is incorporated herein by reference.

There are no specific federal permitting requirements for recreational anglers to fish for or harvest cobia. Instead, anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions. As a result, it is not possible to identify with available data how many individual anglers would be expected to be affected by this proposed FMP.

Recently, the states of North Carolina and Virginia have developed programs to survey recreational cobia fishermen. These programs may provide information in the future that would help characterize the cobia fisheries in these states.

1.3.2.2. Harvest

On average, from 2010 through 2015, the recreational sector landed approximately 793,000 lbs ww of Atlantic cobia (Table 4). North Carolina has been the dominant state in recreational landings of cobia, followed by Virginia, South Carolina, and Georgia. Cobia landings north of

Virginia are relatively rare and sporadic, thus, Virginia is considered the northernmost major contributor to the recreational Atlantic cobia fishery. Noticeable in the table is the surge in the recreational landings of cobia for all states in 2015, resulting in 2015 landings that were more than double the recreational ACL. Preliminary landings (1,289,993 lbs ww, GA-VA; Pers. com. National Marine Fisheries Service [NMFS] [July 21, 2017]) indicate that a similar circumstance occurred in 2016.

The private/rental mode has been the most dominant fishing mode for harvesting cobia (Table 5). Headboats have provided the lowest contribution to recreational landings of cobia. Information reported in Table 5 indicates that the 2015 surge in recreational landings can be attributed to substantial landings increases by the charter and private/rental fishing modes. Charter boat landings more than doubled while private/rental mode landings more than tripled in 2015. In the particular case of the South Carolina charter boat sector, increasing landings of cobia caught from offshore waters (greater than 3 miles) partly compensated for the declining landings from estuarine and nearshore waters (0-3 miles) that have occurred since about 2007 (South Carolina Cobia Management Needs PowerPoint Presentation, SC DNR, 2016).

Table 4. Annual recreational landings (lbs ww) of Atlantic cobia, by state, 2010-2015 (preliminary).

| | Georgia | South Carolina | North Carolina | Virginia | Total |
|---------|----------------|-----------------------|-----------------------|-----------------|--------------|
| 2010 | 77,064 | 63,678 | 559,476 | 237,528 | 937,746 |
| 2011 | 88,049 | 1,554 | 119,678 | 137,931 | 347,213 |
| 2012 | 102,996 | 222,353 | 66,645 | 103,995 | 495,989 |
| 2013 | 28,427 | 19,159 | 492,998 | 354,463 | 895,048 |
| 2014 | 19,768 | 32,010 | 277,846 | 214,426 | 544,050 |
| 2015 | 67,250 | 124,057 | 631,024 | 718,647 | 1,540,978 |
| Average | 63,926 | 77,135 | 357,945 | 294,498 | 793,504 |

Source: SEFSC MRIPACSpec_rec81_15wv6_17Mar16.

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

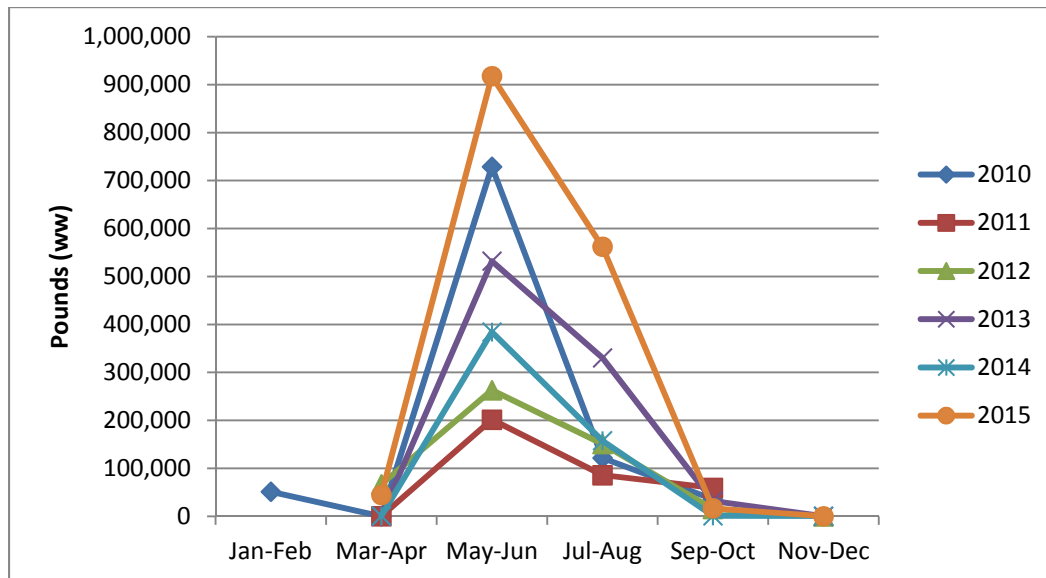
| | Charter | Headboat | Private/Rental | Shore | Total |
|---------|----------------|-----------------|-----------------------|--------------|--------------|
| 2010 | 133,110 | 2,747 | 789,996 | 11,893 | 937,746 |
| 2011 | 23,608 | 1,886 | 282,728 | 38,990 | 347,213 |
| 2012 | 39,729 | 1,671 | 385,777 | 68,811 | 495,989 |
| 2013 | 73,623 | 5,485 | 815,940 | 0 | 895,048 |
| 2014 | 46,528 | 5,701 | 453,871 | 37,950 | 544,050 |
| 2015 | 102,941 | 1,741 | 1,400,338 | 35,957 | 1,540,978 |
| Average | 69,923 | 3,205 | 688,108 | 32,267 | 793,504 |

Source: SEFSC MRIPACSpec_rec81_15wv6_17Mar16.

Peak recreational landings of cobia occurred in the May-June wave each year from 2010 through 2015 (Figure 1). Recreational landings steeply increased from the March-April wave to

their peak and also steeply declined after the peak wave. Landings are concentrated around the May-June and July-August waves.

Figure 1. Distribution of Atlantic cobia recreational harvest, by wave, 2010-2015 (preliminary).



Source: SEFSC MRIPACLspec_rec81_15wv6_17Mar16.

1.3.2.3. Effort

Recreational effort derived from the Marine Recreational Statistics Survey/Marine Recreational Information Program (Marine Recreational Fisheries Statistical Survey [MRFSS]/Marine Recreational Information Program [MRIP]) database can be characterized in terms of the number of trips as follows:

Target effort - The number of individual angler trips, regardless of duration, where the intercepted angler indicated that the species or a species in the species group was targeted as either the first or second primary target for the trip. The species did not have to be caught.

Catch effort - The number of individual angler trips, regardless of duration and target intent, where the individual species or a species in the species group was caught. The fish did not have to be kept.

Total recreational trips - The total estimated number of recreational trips in the Atlantic, regardless of target intent or catch success.

Other measures of effort are possible, such as the number of harvest trips (the number of individual angler trips that harvest a particular species regardless of target intent), and directed trips (the number of individual angler trips that either targeted or caught a particular species), but the three measures of effort listed above are used in this assessment.

Estimates of annual Atlantic cobia effort (in terms of individual angler trips) for 2010-2015 are provided in Table 6 for target trips and Table 7 for catch trips. Target and catch trips are shown by fishing mode (charter, private/rental, shore) for Georgia, South Carolina, North Carolina, and Virginia. These are trips for cobia in state or federal waters off of these states. Estimates of cobia target and catch trips for additional years, and other measures of directed effort, are available at <http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>.

Cobia is one of the few species where target trips generally exceed catch trips. The 2010-2015 average target trips were 4,519 for the charter mode, 130,360 for the private/rental mode, and 28,293 for the shore mode (Table 6). In contrast, the average catch trips were 3,114 for the charter mode, 33,329 for the private/rental mode, and 6,840 for the shore mode (Table 7). This is suggestive of a relatively strong interest in fishing for cobia among recreational anglers across all fishing modes. For each state, the private/rental mode has been the most dominant fishing mode both in target and catch effort.

Table 6. Target trips for Atlantic cobia, by fishing mode and state, 2010-2015 (preliminary).

| Year | Charter | | | | |
|---------|----------------|-------------|-------------|----------|---------|
| | Georgia | S. Carolina | N. Carolina | Virginia | Total |
| 2010 | 0 | 3,349 | 3,029 | 358 | 6,736 |
| 2011 | 22 | 2,940 | 1,416 | 525 | 4,903 |
| 2012 | 0 | 1,025 | 345 | 156 | 1,526 |
| 2013 | 160 | 0 | 2,446 | 24 | 2,630 |
| 2014 | 0 | 1,452 | 1,703 | 295 | 3,450 |
| 2015 | 792 | 1,290 | 2,765 | 3,022 | 7,869 |
| Average | 162 | 1,676 | 1,951 | 730 | 4,519 |
| | Private/Rental | | | | |
| 2010 | 5,453 | 14,228 | 49,358 | 67,730 | 136,769 |
| 2011 | 4,030 | 24,554 | 26,400 | 49,180 | 104,164 |
| 2012 | 2,495 | 57,543 | 23,320 | 37,706 | 121,064 |
| 2013 | 12,235 | 22,373 | 50,883 | 53,981 | 139,472 |
| 2014 | 1,322 | 23,365 | 50,112 | 49,075 | 123,874 |
| 2015 | 12,236 | 9,684 | 58,658 | 76,241 | 156,819 |

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| | | | | | |
|---------|-------|--------|--------|--------|---------|
| Average | 6,295 | 25,291 | 43,122 | 55,652 | 130,360 |
| | Shore | | | | |
| 2010 | 0 | 2,030 | 14,950 | 9,838 | 26,818 |
| 2011 | 0 | 0 | 10,090 | 2,366 | 12,456 |
| 2012 | 0 | 914 | 12,444 | 14,939 | 28,297 |
| 2013 | 0 | 627 | 15,977 | 5,693 | 22,297 |
| 2014 | 0 | 2,395 | 17,085 | 18,565 | 38,045 |
| 2015 | 0 | 363 | 21,925 | 19,554 | 41,842 |
| Average | 0 | 1,055 | 15,412 | 11,826 | 28,293 |

Source: <http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>.

Table 7. Catch trips for Atlantic cobia, by fishing mode and state, 2010-2015 (preliminary).

| Year | Charter | | | | |
|---------|----------------|------------|------------|----------|--------|
| | Georgia | South Car. | North Car. | Virginia | Total |
| 2010 | 97 | 1,301 | 4,398 | 237 | 6,033 |
| 2011 | 400 | 0 | 1,655 | 135 | 2,190 |
| 2012 | 140 | 372 | 472 | 156 | 1,140 |
| 2013 | 160 | 48 | 2,798 | 24 | 3,030 |
| 2014 | 55 | 110 | 1,559 | 72 | 1,796 |
| 2015 | 0 | 879 | 2,652 | 963 | 4,494 |
| Average | 142 | 452 | 2,256 | 265 | 3,114 |
| | Private/Rental | | | | |
| 2010 | 3,320 | 2,939 | 18,433 | 13,600 | 38,292 |
| 2011 | 4,145 | 606 | 8,156 | 9,291 | 22,198 |
| 2012 | 3,296 | 5,134 | 4,869 | 6,658 | 19,957 |
| 2013 | 1,157 | 3,699 | 21,047 | 14,256 | 40,159 |
| 2014 | 1,436 | 2,957 | 10,561 | 14,803 | 29,757 |
| 2015 | 2,351 | 4,396 | 18,740 | 24,121 | 49,608 |

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| | | | | | |
|---------|-------|-------|--------|--------|--------|
| Average | 2,618 | 3,289 | 13,634 | 13,788 | 33,329 |
| | Shore | | | | |
| 2010 | 0 | 0 | 6,192 | 0 | 6,192 |
| 2011 | 0 | 0 | 6,528 | 0 | 6,528 |
| 2012 | 0 | 0 | 7,983 | 2,055 | 10,038 |
| 2013 | 0 | 0 | 2,673 | 0 | 2,673 |
| 2014 | 0 | 3,268 | 6,128 | 0 | 9,396 |
| 2015 | 0 | 2,697 | 3,514 | 0 | 6,211 |
| Average | 0 | 994 | 5,503 | 343 | 6,840 |

Source: <http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>.

Headboat data in the Southeast do not support the estimation of target or catch effort because target intent is not collected and the harvest data (the data reflects only harvest information and not total catch) are collected on a vessel basis and not by individual angler. **Table 8** contains estimates of the number of headboat angler days for the South Atlantic states for 2010-2015. Georgia and South Carolina data are combined for confidentiality purposes. Virginia information was not available because only South Atlantic headboats are included in the SRHS.

Table 8. South Atlantic headboat angler days, by state, 2010-2015.

| Year | GA/SC | NC | TOTAL |
|---------|--------|--------|--------|
| 2010 | 46,908 | 21,071 | 67,979 |
| 2011 | 46,210 | 18,457 | 64,667 |
| 2012 | 42,064 | 20,766 | 62,830 |
| 2013 | 42,853 | 20,547 | 63,400 |
| 2014 | 44,092 | 22,691 | 66,783 |
| 2015 | 41,479 | 22,716 | 64,195 |
| Average | 43,934 | 21,041 | 64,976 |

Source: NMFS Southeast Region Headboat Survey (SRHS).

1.3.2.4. State Specific Recreational Fisheries

Georgia

A large recreational fishery exists for cobia in Georgia. The majority of this fishery occurs in nearshore waters around natural and artificial reefs. While there are some instances of cobia being caught inshore and on beach front piers in Georgia, most landings come from outside state waters. Anglers begin targeting cobia in late April-early May with the peak of the season typically occurring in June. Late season catches often occur on nearshore reefs through October depending on water temperatures. However, these fall runs of fish are sporadic and are often missed by anglers.

South Carolina

The recreational fishery accounts for the majority of cobia landings in South Carolina. The fishery occurs in both nearshore waters and around natural and artificial reefs offshore. Historically, the majority of cobia landings have occurred in state waters in and around spawning aggregations from April through May. However, due to intense fishing pressure in the inshore zone, annual landings of cobia have fallen drastically since 2009, such that the majority of recreationally caught cobia in South Carolina now come from offshore (federal) waters. Anglers begin targeting cobia in late April-early May with the peak of the season typically occurring May into early June. Late season catches can occur on nearshore reefs through October depending on water temperatures. However, these fall catches are sporadic. South Carolina has accounted for an average of 1.3% of total landings in state jurisdictional waters along the Atlantic coast for 2010-2016.

North Carolina

Historically, recreational fisherman targeted cobia from a vessel by anchoring and fishing with dead, live, or a mixture of both bait types near inlets and deep water sloughs inshore (Manooch 1984). Fish were also harvested from shore or off of piers using dead or live bait, most commonly menhaden. In the early 2000s, fisherman began outfitting their vessels with towers to gain a higher vantage point to spot and target free swimming cobia along tidelines and around bait aggregations. This method of fishing actively targets cobia in the nearshore coastal zone and has become the primary mode of fishing in most parts of the state.

Recreational harvests of cobia in North Carolina from 1981-2016 have ranged from a low of 0 pounds (1983) to a high of 631,024 pounds (2015). Landings during the 1980s and 1990s remained relatively constant from year to year. Landings began to increase and become more variable beginning in the mid-2000s. From 2010-2015, recreational cobia landings in North Carolina ranged from 66,645 to 631,024 pounds (avg. = 357,945 pounds). Seasonally, cobia are landed mostly in the spring and summer months corresponding with their spring spawning migration (Smith 1995). Peak landings occur during the latter part of May into June and quickly diminish thereafter. However, recreational landings of cobia can occur through the month of October. By fishing mode, the majority of recreational landings of cobia in North Carolina occur from private vessels (73 %) with charter vessels (14 %) and shore based modes (13 %) accounting for the rest.

Virginia

According to the MRFSS/MRIP, Virginia's estimated recreational landings of cobia have been highly variable since 2000, with the lowest estimate being 26,537 pounds in 2012 and 898,542 pounds in 2006 (Appendix II, Table VA3). Although still preliminary, the estimate for 2016 is 919,992 pounds. It is believed the recreational fishery has grown in recent years, both in the number of participants, and the effectiveness of fishing due to the advent of sight-casting—especially when aided by “cobia towers.” Traditionally, cobia had been targeted using live-bait bottom-fishing, but these new techniques are causing a shift in preference among anglers. However, the extent of this change is not clear for Virginia's recreational fishery.

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

1.3.3. Subsistence Fishery

There is no known subsistence fishery for cobia.

1.3.4. Non-Consumptive Factors

No non-consumptive factors were identified that were of significance to the cobia resource.

1.3.5. Interactions with Other Fisheries, Species, or Users

The recreational cobia fishery tends to be a targeted fishery. Various small and large coastal sharks and various ray species are the most common bycatch. Cobia are encountered as bycatch in the troll and live bait fisheries for king and Spanish mackerel, dolphin, and other pelagic species. Additionally, cobia are taken incidental to offshore bottom fishing activities for snapper/grouper species.

The commercial cobia fishery is primarily bycatch in the same troll fisheries and taken incidental to snapper/grouper fisheries. Some directed harvest does occur; however, low limits preclude a large scale fishery.

1.4. HABITAT CONSIDERATIONS

1.4.1. Habitat Important to the Stocks

1.4.1.1. Description of the Habitat

1.4.1.1.1. Spawning Habitat

The SAFMC has management jurisdiction of the federal waters (3-200 nautical miles) offshore of North Carolina, South Carolina, Georgia, and Florida. Under the CMP FMP, the SAFMC manages Atlantic cobia through the Mid-Atlantic region (VA-NY).

Cobia spawn in nearshore waters along the South Atlantic coast from April through June. Nearby states (South Carolina) have documented the presence of inshore spawning aggregations of cobia (Lefebvre and Denson, 2012). However, there have been no such aggregations identified in Georgia. Eggs and larvae are typically found in nearshore waters and juveniles most often occur inshore or in protected nearshore waters.

Cobia enter nearshore waters along the south Atlantic Coast when water temperatures reach 20-21 °C, usually late April and aggregate to spawn through June. Histological evaluation of gonads from these nearshore collections suggest cobia are mature and spawning in inshore waters of high salinity estuaries (Callibogue, Port Royal Sound and St. Helena Sound in SC)(Lefebvre and Denson, 2012). The inshore spawning aggregations in South Carolina have been determined to be genetically distinct from the Atlantic stock of cobia (Darden et al. 2014). These findings are corroborated by conventional tag-recapture information and show estuarine fidelity for spawning fish and natal homing annually into estuaries. Eggs and larvae are typically found in nearshore waters where there is significant retention time of estuarine waters; however, juveniles (< 2yrs of age) are only occasionally caught inshore or in protected nearshore waters making it unclear what habitat the majority of this life stage utilizes until they mature and join spawning aggregations (Lefebvre and Denson, 2012).

1.4.1.1.2. Larval Habitat

Little is known about the larval stages of cobia. Larvae have been collected in pelagic waters of the Gulf of Mexico (65-134 m isobaths), within a meter of the water column (Ditty and Shaw 1992).

1.4.1.1.3. Juvenile Habitat

Juveniles, like larvae, have also been found in pelagic waters of the Gulf of Mexico, and are believed to utilize floating *Sargassum* as habitat in such areas (Ditty and Shaw 1992). Early juveniles then move to high-salinity, inshore areas along beaches, river mouths, barrier islands, and bays/inlets (Benson 1982, Hoese and Moore 1977, McClane 1974, Swingle 1971).

1.4.1.1.4. Adult Habitat

Adults enter estuaries on a seasonal basis but otherwise inhabit coastal waters and the continental shelf (Benson 1982, Collette 1978, Robins and Ray 1986). Although generally considered pelagic, adult cobia are found at various depths throughout the water column (Freeman and Walford 1976). They do not appear to be substratum-specific, but extensive tagging research is currently being conducted by various states along the U.S. Atlantic coast to better determine movement and habitat usage.

1.4.1.1.4.1. South Atlantic Region

The continental shelf off the southeastern U.S., extending from the Dry Tortugas, FL, to Cape Hatteras, NC, encompasses an area in excess of 100,000 square km (Menzel 1993). Based on

physical oceanography and geomorphology, this environment can be divided into two regions: Dry Tortugas, FL, to Cape Canaveral, FL, and Cape Canaveral, FL, to Cape Hatteras, NC. The continental shelf from the Dry Tortugas, FL, to Miami, FL, is approximately 25 km wide and narrows to approximately 5 km off Palm Beach, FL. The shelf then broadens to approximately 120 km off Georgia and South Carolina before narrowing to 30 km off Cape Hatteras, NC. The Florida Current/Gulf Stream flows along the shelf edge throughout the region. In the southern region, this boundary current dominates the physics of the entire shelf (Lee et al. 1994).

In the northern region, additional physical processes are important and the shelf environment can be subdivided into three oceanographic zones (Atkinson et al. 1985, Menzel 1993), the outer shelf, mid-shelf, and inner shelf. The outer shelf (40-75 meters (m)) is influenced primarily by the Gulf Stream and secondarily by winds and tides. On the mid-shelf (20-40 m), the water column is almost equally affected by the Gulf Stream, winds, and tides. Inner shelf waters (0-20 m) are influenced by freshwater runoff, winds, tides, and bottom friction. Water masses present from the Dry Tortugas, FL, to Cape Canaveral, FL, include Florida Current water, waters originating in Florida Bay, and shelf water.

Spatial and temporal variation in the position of the western boundary current has dramatic effects on water column habitats. Variation in the path of the Florida Current near the

Dry Tortugas induces formation of the Tortugas Gyre (Lee et al. 1992, 1994). This cyclonic eddy has horizontal dimensions of approximately 100 km and may persist near the Florida Keys for several months. The Pourtales Gyre, which has been found to the east, is formed when the Tortugas Gyres moves eastward along the shelf. Upwelling occurs in the center of these gyres, thereby adding nutrients to the near surface (<100 m) water column. Wind and input of Florida Bay water also influence the water column structure on the shelf off the Florida Keys (Smith 1994, Wang et al. 1994). Further downstream, the Gulf Stream encounters the "Charleston Bump", a topographic rise on the upper Blake Ridge where the current is often deflected offshore resulting in the formation of a cold, quasi-permanent cyclonic gyre and associated upwelling (Brooks and Bane 1978). On the continental shelf, offshore projecting shoals at Cape Fear, Cape Lookout, and Cape Hatteras, NC, affect longshore coastal currents and interact with Gulf Stream intrusions to produce local upwelling (Blanton et al. 1981, Janowitz and Pietrafesa 1982). Shoreward of the Gulf Stream, seasonal horizontal temperature and salinity gradients define the mid-shelf and inner-shelf fronts. In coastal waters, river discharge and estuarine tidal plumes contribute to the water column structure.

The water column from Dry Tortugas, FL, to Cape Hatteras, NC, serves as habitat for many marine fish and shellfish. Most marine fish and shellfish release pelagic eggs when spawning and thus, most species utilize the water column during some portion of their early life history (Leis 1991, Yeung and McGowan 1991). Many fish inhabit the water column as adults. Pelagic fishes include numerous clupeoids, flying fish, jacks, cobia, bluefish, dolphin, barracuda, and the mackerels (Schwartz 1989). Some pelagic species are associated with particular benthic habitats, while other species are truly pelagic.

1.4.1.1.4.2. Mid-Atlantic Region

Information about the physical environment of the Mid-Atlantic region was provided by the Mid-Atlantic Fishery Management Council (MAFMC) and adapted from the 2016 Mackerel, Squid, and Butterfish Specifications Environmental Assessment, available at: <http://www.greateratlantic.fisheries.noaa.gov/regs/2016/January/16msb2016specspr.html>.

Climate, physiographic, and hydrographic differences separate the Atlantic Ocean from Maine to Florida into the New England-Middle Atlantic Area and the South Atlantic Area (division/mixing at Cape Hatteras, NC). The inshore New England-Middle Atlantic area is fairly uniform physically and is influenced by many large coastal rivers and estuarine areas. The continental shelf (characterized by water less than 650 ft. in depth) extends seaward approximately 120 miles off Cape Cod, narrows gradually to 70 miles off New Jersey, and is 20 miles wide at Cape Hatteras. Surface circulation is generally southwesterly on the continental shelf during all seasons of the year, although this may be interrupted by coastal indrafting and some reversal of flow at the northern and southern extremities of the area. Water temperatures range from less than 33°F from the New York Bight north in the winter to over 80°F off Cape Hatteras in summer.

Within the New England-Middle Atlantic Area, the Northeast U.S. Continental Shelf Large Marine Ecosystem includes the area from the Gulf of Maine to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The Northeast U.S. Continental Shelf Large Marine Ecosystem is a dynamic, highly productive, and intensively studied system providing a broad spectrum of ecosystem goods and services. This region, encompassing the continental shelf area between Cape Hatteras and the Gulf of Maine, spans approximately 250,000 km² and supports some of the highest revenue fisheries in the U.S. The system historically underwent profound changes due to very heavy exploitation by distant-water and domestic fishing fleets. Further, the region is experiencing changes in climate and physical forcing that have contributed to large-scale alteration in ecosystem structure and function. Projections indicate continued future climate change related to both short and medium-term cyclic trends as well as non-cyclic climate change.

A number of distinct subsystems comprise the region. The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and fast-moving currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. Detailed information on the affected physical and biological environments inhabited by the managed resources is available in Stevenson et al. (2006).

1.4.2. Identification and Distribution of Habitat and Habitat Areas of Particular Concern

Habitat information for Atlantic cobia is sparse. Few, if any, fishery independent surveys consistently interact with cobia in numbers adequate to develop any trends or conclusions.

Much of the habitat data presented is generic for the coastal migratory pelagic fishes that include king and Spanish mackerel. Species-specific habitat information is a data and research need.

A description of the Habitat Areas of Particular Concern (HAPC) for CMP species is provided in Amendment 18 to the CMP FMP (GMFMC/ SAFMC 2011), and is incorporated herein by reference. Areas which meet the criteria for HAPCs include sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf stream; The Point, The Ten- Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump and Hurl Rocks (South Carolina); The Point off Jupiter Inlet (Florida); *Phragmatopoma* (worm reefs) reefs off the central east coast of Florida; nearshore hard bottom south of Cape Canaveral; The Hump off Islamorada (Florida); The Marathon Hump off Marathon (Florida); The “Wall” off of the Florida Keys; Pelagic *Sargassum*; and Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the Estuarine Living Marine Resources Program. Estuaries meeting this criteria for Spanish mackerel include Bogue Sound and New River (North Carolina), for cobia, Broad River (South Carolina).

1.4.2.1. Essential Fish Habitat for Coastal Migratory Pelagics

A description of the Essential Fish Habitat (EFH) for CMP species is provided in Amendment 18 to the CMP FMP (GMFMC and SAFMC 2011), and is incorporated herein by reference. EFH for CMPs include coastal estuaries from the U.S./Mexico border to the boundary between the areas covered by the GMFMC and SAFMC from estuarine waters out to depths of 100 fathoms (GMFMC 2004). In the South Atlantic, EFH for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf Stream shoreward, including *Sargassum*. In addition, all coastal inlets, all state-designated nursery habitats of particular importance to coastal migratory pelagics (for example, in North Carolina this would include all primary nursery areas and all secondary nursery areas).

For cobia, EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is an EFH because it provides a mechanism to disperse CMP larvae. For king and Spanish mackerel and cobia, EFH occurs in the South Atlantic and Mid-Atlantic Bights.

1.4.3. Present Condition of Habitats and Habitat Areas of Particular Concern

1.4.3.1. Coastal Spawning Habitat: Condition and Threats Coastal Spawning

It is reasonable to assume that areas where coastal development is taking place rapidly, habitat quality may be compromised. Coastal development is a continuous process in all states and all coastal areas in the nation are experiencing significant growth. The following section describes particular threats to the nearshore habitats in the South Atlantic that meet the characteristics of suitable spawning habitat for cobia.

One threat to the spawning habitat for cobia is navigation and related activities such as dredging and hazards associated with ports and marinas (ASMFC, 2013). According to the SAFMC (1998), impacts from navigation related activities on habitat include direct removal/burial of organisms from dredging and disposal of dredged material, effects due to turbidity and siltation; release of contaminants and uptake of nutrients, metals, and organics; release of oxygen-consuming substances, noise disturbance, and alteration of the hydrodynamic regime and physical characteristics of the habitat. All of these impacts have the potential to substantially decrease the quality and extent of cobia spawning habitat.

Besides creating the need for dredging operations that directly and indirectly affect spawning habitat for cobia, ports also present the potential for spills of hazardous materials. The cargo that arrives and departs from ports includes highly toxic chemicals and petroleum products. Although spills are rare, constant concern exists since huge expanses of productive estuarine and nearshore habitat are at stake. Additional concerns related to navigation and port utilization are discharge of marine debris, garbage, and organic waste into coastal waters.

Maintenance and stabilization of coastal inlets is of concern in certain areas of the southeastern U.S. Studies have implicated jetty construction to alterations in hydrodynamic regimes, thus, affecting the transport of estuarine-dependent organisms' larvae through inlets (Miller *et al.* 1984, Miller 1988).

1.4.3.2. Estuarine Nursery, Juvenile and Subadult Habitat: Condition and threats

Coastal wetlands and their adjacent estuarine waters likely constitute primary nursery, juvenile, and sub-adult habitat for cobia along the coast. Between 1986 and 1997, estuarine and marine wetlands nationwide experienced an estimated net loss of 10,400 acres. However, the rate of loss was reduced over 82% since the previous decade (Dahl 2000). Most of the wetland loss resulted from urban and rural activities and the conversion of wetlands for other uses. Along the southeast Atlantic coast, the state of Florida experienced the greatest loss of coastal wetlands due to urban or rural development (Dahl 2000). However, the loss of estuarine wetlands in the southeast has been relatively low over the past decade, although there is some evidence that invasion by exotic species, such as Brazilian pepper (*Schinus terebinthifolius*), in some areas could pose potential threats to fish and wildlife populations in the future (T. Dahl, pers. comm.).

Throughout the coast, the condition of estuarine habitat varies according to location and the level of urbanization. In general, it can be expected that estuarine habitat adjacent to highly developed areas will exhibit poorer environmental quality than more distant areas. Hence, environmental quality concerns are best summarized on a watershed level.

Threats to estuarine habitats of the southeast were described in Amendment 2 to the Red Drum FMP (ASMFC 2002). Due to the cobia's similar dependence on estuarine habitats throughout its early life history, these same threats are likely to impact cobia as well.

Nutrient enrichment of estuarine waters throughout the southeast is a major threat to the quality of estuarine habitat. Forestry practices contribute significantly to nutrient enrichment in the southeast. Areas involved are extensive and many are in proximity to estuaries. Urban and suburban developments are perhaps the most immediate threat to cobia habitat in the southeast. The almost continuous expansion of ports and marinas in the South Atlantic poses a threat to aquatic and upland habitats. Certain navigation-related activities are not as conspicuous as port terminal construction but have the potential to significantly impact the estuarine habitat upon which cobia depend. Activities related to watercraft operation and support pose numerous threats including discharge of pollutants from boats and runoff from impervious surfaces, contaminants generated in the course of boat maintenance, intensification of existing poor water quality conditions, and the alteration or destruction of wetlands, shellfish and other bottom communities for the construction of marinas and other related infrastructure.

Estuarine habitats of the southeast can be negatively impacted by hydrologic modifications. The latter include activities related to aquaculture, mosquito control, wildlife management, flood control, agriculture and silviculture. Also, ditching, diking, draining, and impounding activities associated with industrial, urban, and suburban development qualify as hydrologic modifications that may impact the estuarine habitat. Alteration of freshwater flows into estuarine areas may change temperature, salinity, and nutrient regimes as well as alter wetland coverage. Studies have demonstrated that changes in salinity and temperature can have profound effects in estuarine fishes (Serafy *et al.* 1997) and that salinity partly dictates the distribution and abundance of estuarine organisms (Holland *et al.* 1996). Cobia may be similarly susceptible to such changes in the physical regime of their environment.

1.4.3.3. Adult Habitat: Condition and Threats

Threats to the cobia's adult habitat are not as numerous as those faced by postlarvae, juveniles, and subadults in the estuary and coastal waters. Current threats to the nearshore and offshore habitats that adult cobia utilize in the South Atlantic include navigation and related activities, dumping of dredged material, mining for sand and minerals, oil and gas exploration, offshore wind facilities, and commercial and industrial activities (SAFMC 1998).

An immediate threat is the sand mining for beach nourishment projects. Associated threats include burial of bottoms near the mine site or near disposal sites, release of contaminants directly or indirectly associated with mining (i.e. mining equipment and materials), increases in turbidity to harmful levels, and hydrologic alterations that could result in diminished desirable habitat.

Offshore mining for minerals may pose a threat to cobia habitat in the future. Currently, no mineral mining activities are taking place in the South Atlantic. However, various proposals to open additional areas off the Atlantic coast to seabed mining have been introduced by the Federal Executive and Legislative branches.

Offshore wind farms may also pose a threat to cobia habitat throughout different life stages in the future (ASMFC 2012). Currently, no offshore wind farms are established in the United States. However, the Atlantic coast is a potential candidate for future wind farm sites.

1.5. IMPACTS OF THE FISHERY MANAGEMENT

1.5.1. Biological and Environmental Impacts

Significant recreational fishery overages of the ACL in 2015 and 2016 raise concerns over the future status of the stock and potential of the stock becoming overfished. Adoption of coastwide management measures can provide flexibility to states while maintaining harvest within the ACL and protecting a portion of the spawning stock. Limits on catch can provide additional protection throughout cobia's geographic range to support a sustained population and fishery.

1.5.2. Social Impacts

There is very little information on fishermen, fishing-dependent businesses, or communities that depend on the cobia fisheries. In order to understand the impact that any new rules and regulations may have on participants in any fishery, in-depth community profiles need to be developed that will aid in the description of communities involved, both present and historical. Limited social science research has been conducted in communities in the U.S. South Atlantic. Until more research is completed and in-depth community profiles are developed for sample communities, it is not possible to fully describe the possible impacts of changes in fishing regulations for any fishery.

While not an in-depth ethnographic study, a project employing rapid assessment was completed to document the location, type, and history of fishing communities in the South Atlantic region. SAFMC staff worked collaboratively with the University of Florida to describe fishing communities in a broad manner (for example, whether the community is characterized mostly by commercial fishing, for-hire, recreational or some combination of all sectors), and link on-the-ground fieldwork with the collection of as much secondary data as possible. The secondary data included U.S. Census records, landings, permits, and state information. All of this information is used to form a baseline dataset to assist in the measurement of social and economic impacts (Jepson et al. 2006).

1.5.2.1. Recreational Fishery

The recreational sector of the cobia fishery is much larger than the commercial sector, and cobia is an important species for recreational anglers and the for-hire sector. Landings estimates indicate that the private recreational sector is the dominant component of the cobia recreational fishery (Table 5), and most landings are associated with Virginia and North Carolina (Table 4).

Implementation of the cobia FMP is expected to impact the recreational sector. Specifically it is likely that social impacts would be most significant for recreational fishermen and for-hire businesses in Virginia and North Carolina. However, the FMP will also allow management to maintain stock health and recreational participation, in addition to consistency in regulations among states.

1.5.2.2. Commercial Fishery

The commercial sector has operated primarily as a bycatch fishery for decades. The current ACL for the commercial fishery is 50,000 pounds from Georgia-New York. Current measures and those proposed in this document essentially maintain status quo for the commercial fishery. In accordance with federal policy, should the coastwide ACL be met, a closure would occur. Depending on the timing of any closure, social impacts would vary.

1.5.3. Other Resource Management Efforts

1.5.3.1. Artificial Reef Development/Management

Approximately 120,000 acres (155 nm²) of ocean and estuarine bottom along the south Atlantic coast have been permitted for the development of artificial reefs (ASMFC 2002). The Georgia Department of Natural Resources is responsible for the development and maintenance of a network of man-made reefs both in estuarine waters and in the open Atlantic Ocean. Funding for the artificial reef program is provided by Federal Aid in Sport Fish Restoration, fishing license revenues, and private contributions. To date, there are 15 reefs within the estuary proper, which are constructed of a variety of materials including concrete rubble, metal cages, and manufactured reef units. These provide habitat for juvenile cobia and other species of recreationally important fishes. In 2001, three "beach" reefs were constructed in locations within Georgia's territorial waters just off the barrier island beaches. These are experimental in nature, but should provide some habitat for juvenile and adult cobia. There are 19 man-made reefs in the U.S. Exclusive Economic Zone (EEZ) ranging from depths of 40 to 130 feet. These reefs are constructed of a variety of materials including surplus vessels, concrete rubble, barges, bridge spans, and manufactured reef units. Both juvenile and adult cobia are known to use these reefs.

The Florida Fish and Wildlife Conservation Commission's (FWC) Division of Marine Fisheries Management administers a state artificial reef program that provides financial and technical assistance to coastal local governments, nonprofit corporations and state universities to develop artificial reefs and to monitor and evaluate these reefs. To date, there are 919 artificial reefs located in the Atlantic off Florida with 38 of these reefs being located within estuarine waters. The estuarine reefs are located in two Florida counties one being Dade County which has 32 and Palm Beach County which has six. Artificial habitats off Florida range in depth from six feet to 420 feet of water and consist of a variety of materials, i.e., concrete culverts, bridge spans, barges, and decommissioned military ships such as the ex-U.S.S. Hoyt Vandenberg which has become a very popular dive destination. Oyster shells are also used to create artificial

habitat in Florida waters, but the FWC does not keep track of these reefs. These artificial habitats should provide habitat for juvenile and adult cobia off Florida's Atlantic coast.

New Jersey has also developed and invested in an artificial reef program, with the state agency involved since 1984. Similarly, Delaware has invested in an artificial reef program, with 14 reef sites within Delaware Bay. Artificial reef construction is especially important in the Mid-Atlantic region, where near shore bottom is usually featureless sand or mud.

States should continue support for habitat restoration projects, including oyster shell recycling and oyster hatchery programs as well as seagrass restoration, to provide areas of enhanced or restored bottom habitat.

1.5.3.2. Bycatch

Cobia are uncommon bycatch components in most U.S. South and Mid-Atlantic fisheries. Mortalities resulting from cobia released from varying depths in the hook and line fisheries and regulatory discards from the large mesh gill fisheries in North Carolina and Virginia are unknown.

1.6. LOCATION OF TECHNICAL DOCUMENTATION FOR FMP

1.6.1. Review of Resource Life History and Biological Relationships

The PDT has compiled available life history data on cobia, much of which is contained in this document. Readers may review the documents developed for the Coastal Migratory Pelagics FMP by the SAFMC for historical perspective (SAFMC 2016).

1.6.2. Stock Assessment Document

The most recent cobia stock assessment (SEDAR 28) was completed in 2013. The stock assessment utilized the Beaufort Assessment Model with data through 2011 (SEDAR 2013). An updated stock assessment and review of stock structure information from genetic and tagging studies is scheduled for completion in 2019.

1.6.3. Economic Assessment Document

No economic assessment has been performed.

1.6.4. Law Enforcement Assessment Document

ASMFC's Law Enforcement Committee has prepared a document titled "Guidelines for Resource Managers on the Enforceability of Fishery Management Measures" (July 2009), which can be used to evaluate the effectiveness of future measures.

2. GOALS AND OBJECTIVES

2.1. HISTORY AND PURPOSE OF THE PLAN

2.1.1. History of Prior Management Actions

No interstate fisheries management program currently exists for Atlantic cobia. At present, four states have implemented harvest regulations for cobia (Table 9).

Table 9. 2017 State Recreational Regulations for Atlantic Cobia.

| State | Size Limit | Bag Limit | Vessel Limit | Season | Notes |
|----------------|------------|-----------|--------------------------------------------|-----------------------|-----------------------------------|
| Georgia | | | | | |
| South Carolina | 33" FL | 1 | 3 south of Jeremy Inlet, 2 all other areas | See notes | May closure south of Jeremy Inlet |
| North Carolina | 36" FL | 1 | 4 | May 1 – September 1 | |
| Virginia | 40" TL | 1 | 3 | June 1 – September 15 | 1 fish > 50" TL, No gaffing |
| Maryland | none | none | none | none | |
| Delaware | none | none | none | none | Implement federal regulations |
| New Jersey | 37" TL | 2 | none | none | |
| New York | 37" TL | 2 | none | none | |

Commercial regulations are consistent throughout the management unit with a 33 inch FL minimum size limit (Virginia employs a 37 inch TL size limit) and 2 fish per license holder, with up to 6 fish allowed per trip, whichever is more restrictive. The one exception is Virginia, which allows 6 fish per trip regardless of the number of license holders on board.

2.1.2. Purpose and Need for Action

Currently there is no interstate management for cobia, but four main reasons have been identified as to why/how interstate management would benefit the fishery:

- 1) A majority of the coastwide catch occurs in state waters;
- 2) Need to maintain catches within the federal ACL;
- 3) Lack of consistent regulations and goals;
- 4) An Interstate FMP establishes a framework to provide greater flexibility to states and address future concerns or changes in the fishery or population.

2.2. GOAL

The goal of the Cobia FMP shall be to provide for an efficient management structure to implement coastwide management measures in a timely manner.

2.3. OBJECTIVES

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

2.4. SPECIFICATION OF MANAGEMENT UNIT

The proposed management unit is defined as the cobia (*Rachycentron canadum*) resource from Georgia through New York within U.S. waters of the northwest Atlantic Ocean, from the U.S. Atlantic coastal estuaries eastward to the offshore boundaries of the EEZ. The selection of this management unit is based on genetic analysis and tag-recapture data described in this document.

2.4.1. Management Areas

The proposed management area is the Atlantic coast distribution of the resource from Georgia through New York.

2.5. DEFINITION OF OVERFISHING

While the SAFMC CMP Amendment 18 defined overfishing of cobia as exceeding the Overfishing Limit, this definition was not transferred over into Amendment 22. Thus, no overfishing definition currently exists for Atlantic cobia.

2.6. STOCK REBUILDING PROGRAM

The status of the cobia population is currently not overfished; therefore, a stock rebuilding program is not required.

3. MONITORING PROGRAM SPECIFICATIONS/ELEMENTS

Upon approval of the FMP, the South Atlantic Species Advisory Panel (AP) would meet as necessary to review stock assessments for cobia (when available) and all other relevant data pertaining to stock status. Based on this information, the AP would prepare and submit a report of recommendations to the Management Board.

The Cobia Technical Committee (TC) would meet annually, or as necessary, to review state management program changes, developments in the fishery, or other changes or challenges in the fishery.

The Cobia Stock Assessment Subcommittee (SAS), in cooperation with the SAFMC SSC, would generally meet every five years to review and update or perform a benchmark stock assessment on Atlantic cobia. This schedule may be modified as needed to incorporate new information and consideration of the Atlantic cobia stock. A new cobia stock assessment through the SEDAR process is scheduled for completion in 2019.

The Cobia Plan Review Team (PRT) would annually review implementation of the management plan and any subsequent adjustments (addenda), and report to the Management Board on any compliance issues that may arise. The PRT would also prepare the annual Cobia FMP Review and coordinate the annual update and prioritization of research needs (see Section 6.2).

3.1. ASSESSMENT OF ANNUAL RECRUITMENT

No programs currently collect data necessary to assess annual recruitment of cobia.

The FMP recommends examination of possible surveys from which Atlantic cobia abundance indices could be developed. These indices would be valuable for informing future stock assessments.

3.2. ASSESSMENT OF SPAWNING STOCK BIOMASS

SEDAR 28 (2013) provides the most current information on spawning stock biomass. While the stock is not currently considered overfished, the 2013 stock assessment does indicate declines in biomass over the last few years of the assessment (terminal year: 2010). New information should be revealed by the stock assessment scheduled for completion in 2019.

3.3. ASSESSMENT OF FISHING MORTALITY TARGET AND MEASUREMENT

SEDAR 28 (2013) provides the most current information on fishing mortality. The stock is not currently considered to be undergoing overfishing. While no definition currently exists for overfishing the cobia resource, recent overages of the ACL raises concerns. New information should be revealed by the stock assessment scheduled for completion in 2019.

3.4. SUMMARY OF MONITORING PROGRAMS

The proposed FMP includes no requirements regarding fishery-dependent monitoring programs, but all state fishery management agencies are encouraged to pursue full implementation of the standards of the Atlantic Coastal Cooperative Statistics Program (ACCSP). Upon approval of the FMP, the Management Board would recommend a transitional or phased-in approach be adopted to allow for full implementation of the ACCSP standards. Until the ACCSP standards are implemented, the Management Board would encourage state fishery management agencies to initiate implementation of specific ACCSP modules and/or pursue pilot and evaluation studies to assist in development of reporting programs to meet the ACCSP standards. The ACCSP partners are the 15 Atlantic coast states from Maine through Florida, the District of Columbia, the Potomac River Fisheries Commission, NOAA Fisheries, the U.S. Fish and Wildlife Service, the three federal Fishery Management Councils, and the Atlantic States Marine Fisheries Commission. Participation by program partners in the ACCSP would not relieve states from their responsibilities in collating and submitting harvest/monitoring reports to the Commission as required under the proposed FMP.

3.4.1. Catch, Landings, and Effort Information

3.4.1.1. Commercial Catch and Effort Data

The ACCSP's standard for commercial catch and effort statistics is mandatory, trip-level reporting of all commercially harvested marine species, with fishermen and/or dealers required to report standardized data elements for each trip by the tenth of the following month. Refer to the ACCSP Program Design document for more details on standardized data elements.

3.4.1.2. Recreational Catch and Effort Data

The ACCSP has selected the MRIP as the base program for recreational fishing data collection for shore and private boat fishing. The MRIP provides statistics for finfish, but does not cover shellfish fisheries, which will require development of new surveys. The MRIP combines data from two independent surveys to produce estimates of fishing effort, catch, and participation.

3.4.1.2.1. Household Telephone Survey for Effort Data

For private/rental boats and shore, fishing effort data is collected through a random digit-dialed telephone survey of recreational marine fishing license holders. A "wave" is a two-month sampling period, such as January through February (Wave 1) or March through April (Wave 2). The random-digit dialing survey for effort data is conducted in two-week periods that begin the last week of each wave and continue through the first week of the next wave.

3.4.1.2.2. Intercept Survey for Catch Data

Catch data for private/rental boats and shore fishing is collected through an access-site intercept survey. State partners are encouraged to increase their involvement in conducting the

intercept survey. The ACCSP is addressing transition of conduct of the intercept survey for catch from a contractor to a cooperative agreement involving states at varying levels.

3.4.1.2.3. For-Hire Catch and Effort Data

The ACCSP has selected the NOAA Fisheries For-Hire Survey as the preferred methodology for collecting data from charterboats and headboats (partyboats), also called the “for-hire” sector. The For-Hire Survey is similar to the MRIP with two major improvements; it uses: 1) a telephone survey to collect fishing effort data from vessel representatives and 2) a validation process for the self-reported data. Catch data are collected in conjunction with the MRIP with the addition of on-board samplers for headboats.

The independent survey components of the For-Hire Survey include: 1) a vessel effort survey; 2) an effort validation survey; 3) an access-site intercept survey for catch data; and 4) at-sea samplers on headboats for catch data. Using the data collected through these surveys, NOAA Fisheries generates catch and effort estimates for for-hire fisheries.

3.4.1.2.4. Vessel Telephone Survey for Effort Data

The vessel effort survey is a mandatory survey for for-hire vessels that uses a coastwide directory of such vessels as the sampling frame for for-hire fishing effort. The directory is continually updated as intercept and telephone interviewers identify changes in the fleet. Optimal sampling levels will be determined following evaluation of the Atlantic coast For-Hire Survey results from the first three years. Until the optimal sampling level is determined, a minimum of 10% of for-hire vessels or three charterboats and three headboats (whichever is greater), will be randomly sampled each week in each state. A vessel representative, usually the captain, is called and asked to provide information on the fishing effort associated with that vessel during the previous week. Vessel representatives are notified in advance that they have been selected for sampling and an example form is provided. To be included in the sample frame for particular wave, a vessel record must include: 1) at least one vessel representative’s telephone number; 2) the name of the vessel or a vessel registration number issued by a state or the U.S. Coast Guard; 3) the county the boat operates from during that wave, and 4) designation as either a charter or guide boat (both called “charter”) or headboat.

3.4.1.2.5. Validation Survey for Effort Data

To validate the self-reported effort data collected through the vessel telephone survey, field samplers periodically check access sites used by for-hire vessels to observe vessel effort. Interviewers record the presence or absence of a for-hire vessel from its dock or slip, and if the vessel is absent, they try to ascertain the purpose of the trip. Those observations are compared to telephone data for accuracy and to make any necessary corrections.

3.4.1.2.6. Catch Data

Vessels that meet the ACCSP definition of a charterboat, “typically hired on a per trip basis,” are sampled for catch data through an intercept site survey of anglers at access points, similar to the MRIP. The intercept survey has been in progress since 1981.

Some Partners collect for-hire effort data using Vessel Trip Reports (VTR), which are mandatory for some vessels and contain all minimum data elements collected by the For-Hire Survey. In areas where the survey runs concurrently with VTR programs, captains selected for the weekly telephone survey are permitted to fax their VTRs in lieu to being interviewed by phone.

3.4.1.2.7. At-Sea Sampling of Headboats

At-sea samplers collect catch data aboard headboats, defined by the ACCSP as “any vessel-for-hire engaged in recreational fishing that typically is hired on a per person basis.” Samples collected at-sea are supplemented by dockside sampling.

3.4.2. Biological Information

The ACCSP has set standards for how biological data should be collected and managed for commercial, recreational, and for-hire fisheries. Trained field personnel, known as port agents or field samplers, should obtain biological samples. Information should be collected through direct observation or through interviews with fishermen. Detailed fishery statistics and/or biological samples should be collected at docks, unloading sites, and fish houses. Biological sampling includes species identification of fish and shellfish; extraction of hard parts including spines and otoliths; and tissue samples such as gonads, stomachs, and scales.

3.4.3. Social and Economic Information

3.4.3.1. Commercial Fisheries

The ACCSP is testing its sociological and economic data collection standards for commercial harvesters. Standards for these types of data for dealers and fishing communities are in development with the Committee on Economics and Social Sciences. The ACCSP should collect baseline social and economic data on commercial harvesters using the following voluntary surveys:

- An annual fixed cost survey directed at the owner/operator,
- A trip cost survey to evaluate variable costs associated with a particular vessel’s most recent commercial fishing trip to be directed at the vessel captain, and
- An annual owner/captain/crew/survey to gather sociological information.

Surveys may also be conducted using permit and registration data and vessel trip reports or sampling frames.

3.4.3.2. Recreational and For-hire Fisheries

The ACCSP's sociological and economic data for recreational and for-hire fisheries should come from periodic add-ons to existing telephone and intercept surveys. The standard is voluntary surveys of finfish fisheries conducted at least every three years.

3.4.4. Observer Programs

No specific observer programs are in place to monitor the cobia fishery. Observer programs already in place, whether state or federal, may observe capture of cobia in other monitored fisheries or specific gear types. A review of these programs should take place.

3.5. STOCKING PROGRAM

The Virginia Institute of Marine Science (VIMS) began an experimental stocking program in the Chesapeake Bay in 2003 to explore stock enhancement and study juvenile movement and habitat utilization (VIMS 2017). Juvenile cobia were tagged and released into the Chesapeake Bay in 2003, 2006, 2007, and 2008, with more than 300 tagged releases occurring in those first two years. Recapture information indicated habitats ranged from 1-4 m in depth and consisting of sandy and grass-bed bottoms. It is unclear whether this program had any effect on the population of cobia in Virginia, although it is assumed to have had minimal impact due to the small number of releases.

South Carolina has an experimental stock enhancement program designed to evaluate the methodology necessary for augmenting wild populations. To date experiments have been designed to determine best size and time of year to stock cobia in coastal rivers focused on augmentation of the distinct population segment of cobia in SC. Locally-caught brood stock have been conditioned to spawn in recirculating seawater systems using temperature and photoperiod conditioning and hormone implantations to facilitate final oocyte maturation. To date multiple years of spawning and growout have occurred, and more than 50,000 (60-350 mm TL) cobia have been stocked in the Colleton and Broad Rivers of Port Royal Sound. All fish are genetically identifiable to broodstock group and can be identified in the catch and distinguished genetically from wild-spawned fish. Cobia tissue samples collected from charterboat captains and from carcasses collected at tournaments and cooperating recreational anglers show that as much as 50% of the catch from the 2007 year-class were from hatchery releases and that these animals have persisted in the catch each year since release. This research has demonstrated the application of stock enhancement as an additional management tool for cobia. In addition to research on production of animals, the SCDNR has developed predictive individual-based genetic models to determine the appropriate number of cobia that should be produced and stocked each year in order to grow the population while minimizing any negative impact on the genetic health of the wild population.

3.6. BYCATCH REDUCTION PROGRAM

Bycatch is defined as “portion of a non-targeted species catch taken in addition to the targeted species. It may include non-directed, threatened, endangered, or protected species, as well as individuals of the target species below a desired or regulatory size” (ASMFC 2009a). Bycatch can be divided into two components: incidental catch and discarded catch. Incidental catch refers to retained or marketable catch of non-targeted species, while discarded catch is the portion of the catch returned to the sea because of regulatory, economic, or personal considerations.

The ACCSP’s bycatch standards include both quantitative and qualitative components. The quantitative components include at-sea sampling programs and collection of bycatch data through fisherman reporting systems. The qualitative components include sea turtle and marine mammal entanglement and stranding networks, beach bird surveys, and add-ons to existing recreational and for-hire intercept and telephone surveys. Specific fisheries priorities will be determined annually by the Bycatch Prioritization Committee.

The recreational cobia fishery is largely a directed fishery with bycatch occurring in fisheries directed towards other species. Mortality associated with regulatory discards of undersized cobia or fish taken after the bag limit is reached is largely unknown but likely varies based on depth caught and methods used to boat the catch.

The commercial cobia fishery tends to be a bycatch fishery in the hook and line and large mesh gill net fisheries. Juvenile cobia have been documented as bycatch in shrimp trawls off the Atlantic coast, although this is not a frequent occurrence. All shrimp trawlers in the South Atlantic are required to use bycatch reduction devices, as of the 1996 Amendment 2 to the Federal Shrimp Fishery Management Plan.

3.7. HABITAT PROGRAM

Particular attention should be directed toward cobia habitat utilization and habitat condition (environmental parameters). A list of existing state and federal programs generating environmental data such as sediment characterization, contaminant analysis, and habitat coverage (marsh grass, oyster beds, submerged aquatic vegetation) should also be produced and updated as new information arises. Habitats utilized by cobia range from the middle portions of estuaries and coastal rivers out to and likely beyond, the shelf break. Thus, virtually any study generating environmental data from estuarine or coastal ocean systems could be of value.

4. MANAGEMENT PROGRAM OPTIONS

The intent of the Management Program would be to complement management actions taken by the SAFMC, maintain harvest within the ACL of 670,000 pounds, and to provide the states the flexibility to adjust management to suit their specific state needs.

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

4.1. RECREATIONAL FISHERIES MANAGEMENT OPTIONS

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

Several alternatives for state allocations were developed and discussed by the Management Board and the PDT. As a result of low and variable sample sizes and inconsistencies in the estimation of average weights throughout the management unit, recreational allocation percentage options are based on historical landings in numbers of fish as opposed to weights. These percentages based on numbers of fish would be multiplied by the recreational allocation of the ACL (620,000 pounds) to calculate annual state allocations in pounds. All landings would continue to be monitored against the ACL as weights in pounds. It should be noted that state-specific allocations developed in this FMP may be revisited through the ASMFC's amendment process as more data and better estimates are obtained.

4.1.1. Size Limit Options

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

Option 2: Coastwide size limit: All states would be required to establish a minimum size limit of 36 inches FL by April 1, 2018. A total length equivalent may be considered by the TC and Management Board.

4.1.2. Bag Limit Options

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

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

4.1.3. Vessel Limit Options

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

Option 2: Coastwide vessel limit: All states would be required to establish a daily vessel limit not to exceed 6 fish per vessel by April 1, 2018.

4.1.4. Season and Allocation Options

Management of the recreational ACL may be accomplished by coastwide or state-specific seasons. Options for management of the recreational ACL, including state allocation options, are shown below (Options 1-3).

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

2005 – Delaware – 1,480 lbs.

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

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

Average landings in pounds and corresponding percentages by state vary based on the time series selected and the landings estimate used (SEFSC or MRIP). As a result of concerns raised over the variability in average weights throughout the management unit and the observation that total numbers of fish harvested were consistent between estimation methods, the PDT examined the landings by number of fish to eliminate any bias or concern related to average weights (Table 10).

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

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

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

Historical Landings Reference Period Sub-Options:

- a) 3-year average (2013-2015)

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

Option 2: State-defined seasons that adhere to a soft, state-by-state recreational quota share of the federal ACL, based on a percentage of the state's historical landings in numbers of fish during a specified reference period (Sub-Options a-d). Percentage shares of the ACL would only be divided among states that do not qualify for *de minimis* status. States would develop harvest control measures/seasons to limit catches to their assigned soft state quota. Proposed state measures/seasons must be reviewed and approved by the TC and Management Board for initial implementation by April 1, 2018. Measures approved by the Management Board would remain in place for a specified amount of time, ranging from 2-3 years (Sub-Options e-f).

After each specified time period (Sub-Options e-f), if a state's average annual landings for that time period (Sub-Options e-f) are greater than their annual allocated quota share, that state will adjust their season length or vessel limits for the following specified time period (Sub-Options e-f) to reduce average annual harvest by the average overage from the previous specified time period (Sub-Options e-f). States reporting an under-harvest over the previous specified time period (Sub-Options e-f) may present a plan to extend seasons or increase vessel limits, if desired. Changes to management measures for states with overages or states that wish to liberalize management measures must be reviewed and approved by the TC and Management Board prior to implementation. Allocation of the ACL may be re-evaluated by the Management Board if a *de minimis* state exceeds the *de minimis* threshold.

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

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

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

- e) 2 years
- f) 3 years

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

Table 10. Average AMG Cobia recreational landings in numbers (n) and percentages of recreational landings from Georgia through Virginia for allocating the recreational Annual Catch Limit for Options 1 and 2. Averages are calculated by state for 3-year (2013-2015; Sub-option a), 5-year (2011-2015; Sub-Option b), and 10-year (2006-2015; Sub-Option c) time periods, as well as an average of the 5-year and 10-year time periods (5-yr/10-yr Average; Sub-Option d).

| State | a. 3-yr Average (2013-2015) | b. 5-yr Average (2011-2015) | c. 10-yr Average (2006-2015) | d. 5-yr/10-yr Average |
|----------------|--------------------------------|--------------------------------|---------------------------------|--------------------------|
| Georgia | n = 1,421 4.5% | n = 2,150 9.0% | n = 2,445 10.0% | n = 2,298 9.5% |
| South Carolina | n = 1,984 6.3% | n = 2,558 10.8% | n = 3,312 13.6% | n = 2,935 12.2% |
| North Carolina | n = 15,065 48.2% | n = 10,344 43.5% | n = 8,203 33.6% | n = 9,273 38.5% |
| Virginia | n = 12,799 40.9% | n = 8,714 36.7% | n = 10,465 42.9% | n = 9,589 39.8% |
| Total | N = 31,269 100% | N = 23,766 100% | N = 24,425 100% | n = 24,095 100% |

Data source: SEFSC w/ headboat.

Table 11. Recreational Annual Catch Limits of cobia by state based on percentages derived from Table 10 (ACL = 620,000 pounds).

| State | a. 3-yr Average (2013-2015) (lbs.) | b. 5-yr Average (2011-2015) (lbs.) | c. 10-yr Average (2006-2015) (lbs.) | d. 5-yr/10-yr Average (lbs.) |
|-------|------------------------------------------|------------------------------------------|-------------------------------------------|------------------------------------|
| GA | 27,900 | 55,800 | 62,000 | 58,900 |
| SC | 39,060 | 66,960 | 84,320 | 75,640 |
| NC | 298,840 | 269,700 | 208,320 | 238,700 |
| VA | 253,580 | 227,540 | 265,980 | 246,760 |

Data source: SEFSC w/ headboat.

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

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

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

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

4.2. COMMERCIAL FISHERIES MANAGEMENT OPTIONS

This document proposes that commercial fishery management measures for cobia would complement the existing commercial regulations contained in CMP Amendment 20 (50,000 pound ACL).

4.2.1. Size Limit Options

Option 1: Status Quo: No coastwide size limit.

Option 2: Coastwide size limit: All states would be required to establish a 33 inch FL minimum size limit for commercial cobia fisheries by April 1, 2018. An equivalent total length may be considered by the TC and Management Board.

4.2.2. Possession Limit Options

Option 1: Status Quo: No coastwide possession limit.

Option 2: Coastwide possession limit: All states would be required to establish a maximum commercial possession limit of 2 cobia per license holder not to exceed 6 cobia per vessel by April 1, 2018.

4.3. HABITAT CONSERVATION AND RESTORATION

4.3.1. Threats to Cobia Habitat

Threats to Cobia habitats include the following: loss of estuarine and marine wetlands, coastal development, nutrient enrichment of estuarine waters, poor water quality, hydrologic modifications, and alteration of freshwater flows into estuarine waters.

4.3.2. Recommendations

1. Where sufficient knowledge is available, states should designate cobia habitat areas of particular concern for special protection. These locations should be accompanied by requirements that limit degradation of habitat, including minimization of non-point source and specifically storm water runoff, prevention of significant increases in contaminant loadings, and prevention of the introduction of any new categories of contaminants into the area.
2. Where habitat areas have already been identified and protected, states should ensure continued protection of these areas by notifying and working with other federal, state, and local agencies. States should advise these agencies of potential threats to cobia and recommend measures that should be employed to avoid, minimize, or eliminate any threat to current habitat quality or quantity.
3. States should minimize loss of wetlands to shoreline stabilization by using the best available information, incorporating erosion rates, and promoting incentives for use of

alternatives to vertical shoreline stabilization measures, commonly referred to as living shorelines projects.

4. All state and federal agencies responsible for reviewing impact statements and permit applications for projects or facilities proposed for cobia spawning and nursery areas should ensure that those projects will have no or only minimal impact on local stocks. Any project that would result in the elimination of essential habitat should be avoided, if possible, or at a minimum, adequately mitigated.
5. Each state should establish windows of compatibility for activities known or suspected to adversely affect cobia life stages and their habitats. Activities may include, but are not limited to, navigational dredging, bridge construction, and dredged material disposal, and notify the appropriate construction or regulatory agencies in writing.
6. Each state should develop water use and flow regime guidelines, where applicable, to ensure that appropriate water levels and salinity levels are maintained for the long-term protection and sustainability of the stocks. Projects involving water withdrawal or interruption of water flow should be evaluated to ensure that any impacts are minimized, and that any modifications to water flow or salinity regimes maintain levels within cobia tolerance limits.
7. The use of any fishing gear that is determined by management agencies to have a negative impact on cobia habitat should be prohibited within habitat areas of particular concern. Further, states should protect vulnerable habitat from other types of non-fishing disturbance as well.
8. States should conduct research to evaluate the role of submerged aquatic vegetation (SAV) and other submersed structures in the spawning success, survival, growth and abundance of cobia. This research could include regular mapping of the bottom habitat in identified areas of concern, as well as systematic mapping of this habitat where it occurs in estuarine and marine waters of the states.
9. States should continue support for habitat restoration projects, including oyster shell recycling and oyster hatchery programs as well as seagrass restoration, to provide areas of enhanced or restored bottom habitat.
10. Water quality criteria for cobia spawning and nursery areas should be established, or existing criteria should be upgraded, to ensure successful reproduction of these species. Any action taken should be consistent with Federal Clean Water Act guidelines and specifications.
11. State fishery regulatory agencies, in collaboration with state water quality agencies, should monitor water quality in known habitat for cobia, including turbidity, nutrient levels, and dissolved oxygen.
12. States should work to reduce point-source pollution from wastewater through such methods as improved inspections of wastewater treatment facilities and improved maintenance of collection infrastructure.
13. States should develop protocols and schedules for providing input on water quality regulations and on Federal permits and licenses required by the Clean Water Act, Federal Power Act, and other appropriate vehicles, to ensure that cobia habitats are protected and water quality needs are met.

4.4. ALTERNATIVE STATE MANAGEMENT REGIMES

Upon approval of the FMP, states would be required to obtain prior approval from the Management Board for any changes to their management program for which a compliance requirement is in effect. Changes to non-compliance measures would be required to be reported to the Management Board but may be implemented without prior Management Board approval. A state would be able to request permission to implement an alternative to any mandatory compliance measure only if that state could show to the Management Board's satisfaction that its alternative proposal would have the same conservation value as the measures contained in this FMP or subsequent amendments or addenda. States submitting alternative proposals would be required to demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans would be required to be submitted in writing to the Management Board either as part of the annual FMP Review process or in the Annual Compliance Reports.

4.4.1. General Procedures

A state would be able to submit a proposal for a change to its regulatory program or any mandatory compliance measure under the Cobia Fishery Management Plan to the Management Board, including a proposal for *de minimis* status. Such changes would be submitted to the Chair of the PRT, who would distribute the proposal to the Management Board, PRT, TC, SAS, and AP.

The PRT would be responsible for gathering the comments of the TC, SAS, and AP and presenting these comments as soon as possible to the Management Board for decision.

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

4.4.2. Management Program Equivalency

The TC, under the direction of the PRT, would review any alternative state proposals under this section and provide to the Management Board its evaluation of the adequacy of such proposals.

Following the first full year of implementation of an alternate management program, the PRT would have the responsibility of evaluating the effects of the program to determine if the measures were equivalent with the standards of the FMP and subsequent amendments or addenda. The PRT would report to the Management Board on the performance of the alternate program.

4.4.3. *De minimis* Fishery Guidelines

The ASMFC ISFMP Charter defines *de minimis* as "a situation in which, under the existing condition of the stock and scope of the fishery, conservation, and enforcement actions taken by

an individual state would be expected to contribute insignificantly to a coastwide conservation program required by a Fishery Management Plan or amendment” (ASMFC 2009b).

States may petition the Management Board at any time for *de minimis* status. Once *de minimis* status is granted, designated states must submit annual reports including commercial and recreational landings to the Management Board, justifying the continuance of *de minimis* status. States must include *de minimis* requests as part of their annual compliance reports.

Option 1: No *de minimis* program

Option 2: Include *de minimis*: To qualify for *de minimis*, a state’s average total (commercial and recreational) landings for the previous 2 years must be less than 1% of the average coastwide total landings for the same time period. If a state meets the requirements, the state would be limited to 1 fish per vessel per trip. Minimum size of the 1 fish per vessel per trip may mirror the previously proposed minimum size limits of the commercial and recreational fisheries (33 inches and 36 inches FL, respectively) or be the more conservative limit (36 inches FL) for both the commercial and recreational sectors (Sub-Options a-b).

Minimum Size Limits for *De minimis*-Qualifying States Sub-Options (a-b):

- a) Minimum size limits of 33 inches FL for the commercial fishery and 36 inches FL for the recreational fishery
- b) Minimum size limit of 36 inches FL for both the commercial and recreational fisheries

4.5. ADAPTIVE MANAGEMENT

The Management Board would be able to vary the requirements specified in this FMP as a part of adaptive management in order to conserve the cobia resource. Specifically, the Management Board would be able to change target fishing mortality rates, harvest specifications, or other measures designed to prevent overfishing of the stock complex or any spawning component. Such changes would be instituted to be effective on the first fishing day of the following year, but may be put in place at an alternative time when deemed necessary by the Management Board.

4.5.1. General Procedures

The PRT would monitor the status of the fisheries and the resources and report on that status to the Management Board annually or when directed to do so by the Management Board. The PRT would consult with the TC, SAS, and AP in making such review and report. The report will contain recommendations concerning proposed adaptive management revisions to the management program.

The Management Board would review the report of the PRT, and may consult further with the TC, SAS, or AP. The Management Board would be able to, based on the PRT Report or on its

own discretion, direct the PRT to prepare an addendum to make any changes it deems necessary. The addendum would contain a schedule for the states to implement its provisions.

The PRT would prepare a draft addendum, as directed by the Management Board, and distribute to the board for approval for public comment. The document would be released for public comment for a minimum of 30 days. A public hearing would be held in any state that requests one. After the comment period, the PRT would summarize the comments and present them to the Board along with the recommendations of the TC, SAS, LEC and AP, when applicable. The Management Board would choose a management program and approve a final document.

Upon adoption of an addendum implementing adaptive management by the Management Board, states would prepare plans to carry out the addendum and submit them to the Management Board for approval, according to the schedule contained in the addendum.

4.5.2. Measures Subject to Change

The following measures would be subject to change under adaptive management upon approval by the Management Board:

- (1) Fishing year and/or seasons;
- (2) Area closures;
- (3) Overfishing definition, MSY and OY;
- (4) Rebuilding targets and schedules;
- (5) Catch controls, including bag and size limits;
- (6) Effort controls;
- (7) Bycatch allowance
- (8) Reporting requirements;
- (9) Gear limitations;
- (10) Measures to reduce or monitor bycatch;
- (11) Observer requirements;
- (12) Management areas;
- (13) Recommendations to the Secretaries for complementary actions in federal jurisdictions;
- (14) Research or monitoring requirements;
- (15) Frequency of stock assessments;
- (16) *De minimis* specifications;
- (17) Management unit;
- (18) Maintenance of stock structure;
- (19) Catch allocation; and
- (20) Any other management measures currently included in the FMP.

4.6. EMERGENCY PROCEDURES

Emergency procedures would be able to be used by the Management Board to require any emergency action that is not covered by or is an exception or change to any provision in the FMP. Procedures for implementation are addressed in the ASMFC ISFMP Program Charter, Section Six (c) (11) (ASMFC 2009b).

4.7. MANAGEMENT INSTITUTIONS

The management institution for cobia would be subject to the provisions of the ISFMP Charter (ASMFC 2009b). The following would not be intended to replace any or all of the provisions of the ISFMP Charter. All committee roles and responsibilities are included in detail in the ISFMP Charter and are only summarized here.

4.7.1. ASMFC and the ISFMP Policy Board

The ASMFC and the ISFMP Policy Board are generally responsible for the oversight and management of the Commission's fisheries management activities. The Commission must approve all fishery management plans and amendments, and must make all final determinations concerning state compliance or non-compliance. The ISFMP Policy Board reviews any non-compliance recommendations of the various Management Boards and Sections and, if it concurs, forwards them on to the Commission for action.

4.7.2. South Atlantic State/Federal Fisheries Management Board

The South Atlantic State/Federal Fisheries Management Board (Management Board) was established under the provisions of the Commission's ISFMP Charter (Section Four; ASMFC 2009b) and would be generally responsible for carrying out all activities under this FMP.

The Management Board establishes and oversees the activities of the Cobia FMP's PDT, PRT, TC, and SAS, as well as the South Atlantic Species AP. Among other things, the Management Board makes changes to the management program under adaptive management and approves state programs implementing the amendment and alternative state programs under Sections 4.4 and 4.5. The Management Board reviews the status of state compliance with the management program, at least annually, and if it determines that a state is out of compliance, reports that determination to the ISFMP Policy Board under the terms of the ISFMP Charter.

4.7.3. Cobia Plan Development Team / Plan Review Team

The Cobia Plan Development Team (PDT) and Cobia Plan Review Team (PRT) would be composed of a small group of scientists and/or managers whose responsibility is to provide all of the technical support necessary to carry out and document the decisions of the Management Board. An ASMFC FMP Coordinator chairs the PDT and PRT. The PDT and PRT would be directly responsible to the Management Board for providing information and documentation concerning the implementation, review, monitoring and enforcement of the species management plan. The PDT and PRT would be comprised of personnel from state and federal agencies who have scientific and management ability and knowledge of the relevant species.

The Cobia PDT is responsible for preparing all documentation necessary for the development of the FMP, using the best scientific information available and the most current stock assessment information. The PDT will either disband or assume inactive status upon completion of the FMP. Alternatively, the Board may elect to retain PDT members as members of the species-specific PRT or appoint new members. The PRT would provide annual advice concerning the implementation, review, monitoring, and enforcement of the FMP once it has been adopted by the Commission.

4.7.4. Technical Committee

The Cobia Technical Committee (TC) would consist of representatives from state and/or federal agencies, Regional Fishery Management Councils, Commission, university or other specialized personnel with scientific and technical expertise and knowledge of the relevant species. The Management Board would appoint the members of a TC and may authorize additional seats as it sees fit. Its role is to act as a liaison to the individual state and federal agencies, provide information to the management process, and review and develop options concerning the management program. The TC would provide scientific and technical advice to the Management Board, PDT, and PRT in the development and monitoring of a fishery management plan or amendment.

4.7.5. Stock Assessment Subcommittee

The Cobia Stock Assessment Subcommittee (SAS) would be appointed and approved by the Management Board, with consultation from the TC, and will consist of scientists with expertise in the assessment of the relevant population. Its role is to assess the species population and provide scientific advice concerning the implications of proposed or potential management alternatives, or to respond to other scientific questions from the Management Board, TC, PDT or PRT. The SAS would report to the TC and work closely with the Southeast Fishery Science Center and SAFMC SSC in developing upcoming stock assessments.

4.7.6. Advisory Panel

The South Atlantic Species Advisory Panel (AP) was established according to the Commission's Advisory Committee Charter. Members of the AP are citizens who represent a cross-section of commercial and recreational fishing interests and others who are concerned about the conservation and management of cobia, as well as Spanish mackerel, spot, black drum, red drum, and spotted seatrout, and Atlantic croaker. The AP provides the Management Board with advice directly concerning the Commission's management program for these six species.

4.7.7. Federal Agencies

4.7.7.1. Management in the Exclusive Economic Zone (EEZ)

Management of cobia in the EEZ is within the jurisdiction of the SAFMC under the Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 U.S.C. 1801 et seq.). In the

absence of a Council Fishery Management Plan for cobia, management of this species is the responsibility of the NOAA National Marine Fisheries Service (NOAA Fisheries) as mandated by the Atlantic Coastal Fisheries Cooperative Management Act (16 U.S.C. 5105 et seq.).

4.7.7.2. Federal Agency Participation in the Management Process

The Commission has accorded the United States Fish and Wildlife Service (USFWS) and NMFS NOAA Fisheries voting status on the ISFMP Policy Board and the South Atlantic State/Federal Fisheries Management Board in accordance with the Commission's ISFMP Charter. NOAA Fisheries and the USFWS may also participate on the Management Board's supporting committees described in *Sections 4.7.3-4.7.6*.

4.7.7.3. Consultation with Fishery Management Councils

In carrying out the provisions of this FMP, the states, as members of the South Atlantic State/Federal Fisheries Management Board, would closely coordinate with the SAFMC to cooperatively manage the Atlantic Migratory Group of cobia. In accordance with the Commission's ISFMP Charter, a representative of the SAFMC shall be invited to participate as a full member of the Management Board.

4.8. RECOMMENDATIONS TO THE SECRETARIES FOR COMPLEMENTARY ACTIONS IN FEDERAL JURISDICTIONS

The SAFMC manages cobia in the EEZ through bag, size limits, trip limits and seasons. It is in the interest of the Interstate FMP to achieve consistency in management efforts in state waters and the EEZ. At present, NOAA fisheries has closed the EEZ to cobia harvest in the recreational fishery to maintain harvest within the prescribed ACL. Because reliance on the EEZ for cobia harvest varies by state, closure impacts vary from south to north. The majority of the recreational harvest off Georgia occurs in the EEZ, while little harvest occurs in the EEZ off Virginia. A primary consideration for the Interstate cobia FMP may be to recommend consistent measures in state and federal waters to avoid in season closures.

4.9. COOPERATION WITH OTHER MANAGEMENT INSTITUTIONS

At this time, no other management institutions have been identified that would be involved with management of cobia on the Atlantic coast. Nothing in the FMP precludes the coordination of future management collaborations with other management institutions, should the need arise.

5. COMPLIANCE

Full implementation of the provisions of this FMP would be necessary for the management program to be equitable, efficient, and effective. States would be expected to implement these measures faithfully under state laws. Although the ASMFC does not have authority to directly compel state implementation of these measures, it would continually monitor the effectiveness of state implementation and determine whether states are in compliance with the provisions of this fishery management plan. This section sets forth the specific elements states would be required to implement in order to be in compliance with this FMP, and the procedures that will govern the evaluation of compliance. Additional details of the procedures are found in the ASMFC ISFMP Charter (ASMFC 2009b).

5.1. MANDATORY COMPLIANCE ELEMENTS FOR STATES

A state would be determined to be out of compliance with the provisions of this fishery management plan, according to the terms of Section Seven of the ISFMP Charter if:

- Its regulatory and management programs to implement *Section 4* have not been approved by the Management Board; or

- It fails to meet any schedule required by *Section 5.1.2*, or any addendum prepared under Adaptive Management (*Section 4.5*); or
- It has failed to implement a change to its program when determined necessary by the South Atlantic State-Federal Fisheries Management Board; or
- It makes a change to its regulations required under *Section 4* or any addendum prepared under Adaptive Management (*Section 4.5*), without prior approval of the Management Board.

5.1.1. Mandatory Elements of State Programs

To be considered in compliance with this FMP, all state programs would include harvest controls on cobia fisheries consistent with the requirements of *Sections 4.1, 4.2, 4.3*; except that a state may propose an alternative management program under *Section 4.5*, which, if approved by the Management Board, may be implemented as an alternative regulatory requirement for compliance.

5.1.1.1. Regulatory Requirements

Each state would be required to submit its cobia regulatory program to the Commission through the ASMFC staff for approval by the Management Board. During the period from submission until the Board makes a decision on a state's program, a state may not adopt a less protective management program than contained in this amendment or contained in current state law. The following lists the specific compliance criteria that a state/jurisdiction would be required to implement in order to be in compliance with this FMP:

1. All states would establish a maximum possession limit of 1 fish per person and a minimum size limit of 36 inches FL, or an equivalent measure in TL, for their recreational fisheries by April 1, 2018.
2. All states would establish a maximum vessel limit not to exceed 6 fish for all recreational and commercial fisheries by April 1, 2018.
3. States would establish a recreational fishing season to correspond with specific harvest goals for the individual state by April 1, 2018.
4. States would be able to apply for *de minimis* status if for the preceding three years for which data are available, their averaged combined commercial and recreational landings (by weight) constitute less than 1% of the average coastwide combined, commercial and recreational landings for the same period.

Once approved by the Management Board, states would be required to obtain prior approval from the Board for any changes to their management program for which a compliance requirement is in effect. Other measures would be required to be reported to the Board but may be implemented without prior Board approval. A state would be able to request

permission to implement an alternative to any mandatory compliance measure only if that state could show to the Board's satisfaction that its alternative proposal would have the same conservation value as the measure contained in this FMP or any subsequent amendments or addenda. States submitting alternative proposals would be required to demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans would need to be submitted in writing to the Board and to the Commission either as part of the annual FMP Review process or the Annual Compliance reports.

5.1.1.2. Monitoring Requirements

There are currently no requirements for additional monitoring. Monitoring may be implemented in the future through the Commission's addendum process.

5.1.1.3. Research Requirements

The PDT has prioritized the research needs for cobia (*Section 6.2*). Appropriate programs for meeting these needs may be implemented under Adaptive Management (*Section 4.5*) in the future.

5.1.1.4. Law Enforcement Requirements

All state programs would be required to include law enforcement capabilities adequate for successfully implementing that state's cobia regulations. The adequacy of a state's enforcement activity would be monitored annually by reports of the ASMFC Law Enforcement Committee to the PRT. The first reporting period would cover the period from January 1, 2018 to December 31, 2018.

5.1.1.5. Habitat Requirements

There are no mandatory habitat requirements in the FMP, although requirements may be added under Adaptive Management (*Section 4.5*). See *Section 4.3* for Habitat Recommendations.

5.1.2. Compliance Schedule

States would be required to implement the FMP according to the following schedule:

- | | |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| January 1, 2018: | States must submit programs to implement the FMP for approval by the South Atlantic State-Federal Fisheries Management Board. Programs must be implemented upon approval by the Management Board. |
| April 1, 2018: | States with approved management programs must implement FMP requirements. States may begin implementing management programs prior to this deadline, if approved by the Management Board. |

Reports on compliance would be submitted to the Commission by each jurisdiction annually, no later than July 1st, beginning in 2019.

5.1.3. Compliance Reporting Content

Each state would be required to submit an annual report concerning its cobia fisheries and management program for the previous calendar year on July 1. A standard compliance report format has been prepared and adopted by the ISFMP Policy Board. States should follow this format in completing the annual compliance report.

5.2. PROCEDURES FOR DETERMINING COMPLIANCE

Detailed procedures regarding compliance determinations are contained in the ISFMP Charter, Section Seven (ASMFC 2009b). Future revisions to the ISFMP Charter may take precedence over the language contained in this FMP, specifically in regards to the roles and responsibilities of the various groups contained in this section. The following summary is not meant in any way to replace the language found in the ISFMP Charter.

In brief, all states are responsible for the full and effective implementation and enforcement of fishery management plans in areas subject to their jurisdiction. Written compliance reports as specified in the FMP (or subsequent amendments and/or addenda) must be submitted annually by each state with a declared interest. Compliance with the FMP will be reviewed at least annually. The Management Board, ISFMP Policy Board or the Commission, may request that the PRT conduct a review of plan implementation and compliance at any time.

The Management Board will review the written findings of the PRT within 60 days of receipt of a state's compliance report. Should the Management Board recommend to the Policy Board that a state be determined to be out of compliance, a rationale for the recommended non-compliance finding will be included addressing specifically the required measures of the FMP that the state has not implemented or enforced, a statement of how failure to implement or enforce the required measures jeopardizes cobia conservation, and the actions a state must take in order to comply with the FMP requirements.

The ISFMP Policy Board shall, within thirty days of receiving a recommendation of non-compliance from the Management Board, review that recommendation of non-compliance. If it concurs in the recommendation, it shall recommend to the Commission that a state be found out of compliance.

The Commission shall consider any FMP non-compliance recommendation from the Policy Board within 30 days. Any state which is the subject of a recommendation for a non-compliance finding is given an opportunity to present written and/or oral testimony concerning whether it should be found out of compliance. If the Commission agrees with the recommendation of the Policy Board, it may determine that a state is not in compliance with the FMP, and specify the actions the state must take to come into compliance.

Any state that has been determined to be out of compliance may request that the Commission rescind its non-compliance findings, provided the state has revised its cobia conservation measures or shown to the Management Board and/or Commission's satisfaction that actions taken by the state provide for conservation equivalency.

5.3. RECOMMENDED (NON-MANDATORY) MANAGEMENT MEASURES

The Management Board through this FMP would request that those states outside the management unit (New York through Maine, and Pennsylvania) implement complementary regulations to protect the cobia spawning stock.

5.4. ANALYSIS OF ENFORCEABILITY OF PROPOSED MEASURES

The ASMFC Law Enforcement Committee would, during the implementation of this FMP, analyze the enforceability of new conservation and management measures as they are proposed.

6. MANAGEMENT AND RESEARCH NEEDS

Characterized as High (H), Medium (M), or Low (L) priority, these management and research needs would be reviewed annually as part of the Commission's FMP Review process. The annual Cobia FMP Review would contain an updated list for future reference.

6.1. STOCK ASSESSMENT AND POPULATION DYNAMICS

An updated stock assessment for the Atlantic Migratory Group cobia has been scheduled for completion in 2019, led by SEFSC Beaufort Lab. The assessment will provide updated status information since the terminal year of the last assessment (2012). Anticipated results will include updated stock status and reference points and contribute to recommendations for additional management needs, if any.

6.2. RESEARCH AND DATA NEEDS

6.2.1. Biological

- Conduct studies to estimate catch and release mortality estimates.
- Obtain better estimates of harvest from the cobia recreational fishery (especially in the for hire sector).
- Increase spatial and temporal coverage of age samples collected regularly in fishery dependent and independent sources. Prioritize collection of age data from fishery dependent and independent sources in all states.
- Collect genetic material to continue to assess the stock identification and any Distinct Population Segments that may exist within the management unit.
- Conduct a high reward tagging program to obtain improved return rate estimates. Continue and expand current tagging programs to obtain mortality and growth information and movement at size data.

- Continue to collect and analyze current life history data from fishery independent and dependent programs, including full size, age, maturity, histology workups and information on spawning season timing and duration. Any additional data that can be collected on any life stages of cobia would be highly beneficial.
- Conduct studies to estimate fecundity-at-age coastwide and to estimate batch fecundity.
- Obtain better estimates of bycatch and mortality of cobia in other fisheries, especially juvenile fish in South Atlantic states.
- Obtain estimates of selectivity-at-age for cobia through observer programs or tagging studies.
- Define, develop, and monitor adult abundance estimates

6.2.2. Social

- Obtain better coverage of shore and nighttime anglers.

6.2.3. Economic

- Obtain better data on the economic impacts of recreational and commercial cobia fishing on coastal communities.

6.2.4. Habitat

- If possible, expand existing fishery independent surveys in time and space to better define and cover cobia habitats.
- Conduct otolith microchemistry studies to identify regional recruitment contributions.
- Conduct new and expand existing satellite tagging programs to help identify spawning and juvenile habitat use and regional recruitment sources.

6.2.5. State-specific

Georgia

Little is known regarding cobia stocks off Georgia. It is unclear if Georgia has a unique sub-population of East-West migration cobia as seen in other nearby states (South Carolina). Furthermore, the range of habitat types (inshore vs. nearshore) utilized by cobia in Georgia remains unknown. It would be beneficial to better explain the range of habitat utilized by cobia in Georgia as well as identify overwintering locations for Georgia cobia. This could be easily done through a simple acoustic telemetry study. Identifying these basic life history characteristics for cobia in Georgia will aid in the management of the species both at a state and a regional level. Additionally, better socio-economic estimates of the impact of cobia fishing in Georgia would aid in understanding how regulatory changes may impact the economic benefit cobia fishing has throughout Georgia.

7. PROTECTED SPECIES

In the fall of 1995, Commission member states, the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) began discussing ways to improve implementation of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) in state waters. Historically, these policies have been minimally enforced in state waters (0-3 miles). In November 1995, the Commission, through its Interstate Fisheries Management Program (ISFMP) Policy Board, approved amendment of its ISFMP Charter (Section Six (b)(2)) so that interactions between ASMFC-managed fisheries and species protected under the MMPA, ESA, and other legislation, including the Migratory Bird Treaty Act be addressed in the Commission's fisheries management planning process. Specifically, the Commission's fishery management plans describe impacts of state fisheries on certain marine mammals and endangered species (collectively termed "protected species"), and recommend ways to minimize these impacts. The following section outlines: (1) the federal legislation which guides protection of marine mammals, sea turtles, and marine birds; (2) the protected species with potential fishery interactions; (3) the specific type(s) of fishery interactions; (4) population status of the affected protected species; and (5) potential impacts to Atlantic coastal state and interstate fisheries.

7.1. Marine Mammal Protection Act (MMPA) Requirements

Since its passage in 1972, one of the primary goals of the MMPA has been to reduce the incidental mortality and serious injury of marine mammals permitted in the course of commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate. Under the 1994 Amendments, the MMPA requires the NMFS to develop and implement a take reduction plan to assist in the recovery or prevent the depletion of each strategic stock that interacts with a Category I or II fishery. Specifically, a strategic stock is defined as a stock: (1) for which the level of direct human caused mortality exceeds the potential biological removal (PBR) level; (2) which is declining and is likely to be listed under the Endangered Species Act (ESA) in the foreseeable future; or (3) which is listed as a threatened or endangered species under the ESA or as a depleted species under the MMPA. Category I and II fisheries are those that have frequent or occasional incidental mortality and serious injury of marine mammals, respectively, whereas Category III fisheries have a remote likelihood of incidental mortality and serious injury of marine mammals. Each year, NMFS publishes an annual List of Fisheries which classifies commercial fisheries into one of these three categories.

Under the 1994 mandates, the MMPA also requires fishermen participating in Category I and II fisheries to register under the Marine Mammal Authorization Program (MMAP), the purpose of which is to provide an exception for commercial fishermen from the general taking prohibitions of the MMPA for non-ESA listed marine mammals. All fishermen, regardless of the category of fishery they participate in, must report all incidental injuries and mortalities caused by commercial fishing operations within 48 hours.

Section 101(a)(5)(E) of the MMPA allows for the authorization of the incidental taking of individuals from marine mammal stocks listed as threatened or endangered under the ESA in

the course of commercial fishing operations if it is determined that: (1) incidental mortality and serious injury will have a negligible impact on the affected species or stock; (2) a recovery plan has been developed or is being developed for such species or stock under the ESA; and (3) where required under Section 118 of the MMPA, a monitoring program has been established, vessels engaged in such fisheries are registered in accordance with Section 118 of the MMPA, and a take reduction plan has been developed or is being developed for such species or stock. Permits are not required for Category III fisheries; however, any mortality or serious injury of a marine mammal must be reported.

7.2. Endangered Species Act (ESA) Requirements

The taking of endangered sea turtles and marine mammals is prohibited and considered unlawful under Section 9(a)(1) of the ESA. In addition, NMFS or the USFWS may issue Section 4(d) protective regulations necessary and advisable to provide for the conservation of threatened species. There are several mechanisms established in the ESA to allow exceptions to the take prohibition in Section 9(a)(1). Section 10(a)(1)(A) of the ESA authorizes NMFS to allow the taking of listed species through the issuance of research permits for scientific purposes or to enhance the propagation or survival of the species. Section 10(a)(1)(B) authorizes NMFS to permit, under prescribed terms and conditions, any taking otherwise prohibited by Section 9(a)(1)(B) of the ESA, if the taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Finally, Section 7(a)(2) requires federal agencies to consult with NMFS to ensure that any action that is authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species. If, following completion of consultation, an action is found to jeopardize the continued existence of any listed species or cause adverse modification to critical habitat of such species, reasonable and prudent alternatives will be identified so that jeopardy or adverse modification to the species is removed and Section 7(a)(2) is met (see Section 7(b)(3)(A)). Alternatively, if, following completion of consultation, an action is not found to jeopardize the continued existence of any listed species or cause adverse modification to critical habitat of such species, reasonable and prudent measures will be identified that minimize the take of listed species or adverse modification of critical habitat of such species (see Section 7(b)(4)). Section (7)(o) provides the actual exemption from the take prohibitions established in Section 9(a)(1), which includes Incidental Take Statements that are provided at the end of consultation via the ESA Section 7 Biological Opinions.

7.3. Migratory Bird Treaty Act (MBTA) Requirements

Under the Migratory Bird Treaty Act it is unlawful “by any means or in any manner, to pursue, hunt, take, capture, [or] kill” any migratory birds except as permitted by regulation (16 USC. 703). Section 50 CFR 21.11 prohibits the take of migratory birds except under a valid permit or as permitted in the regulations. Many migratory waterbirds occur within the boundaries of cobia fisheries. USFWS Policy on Waterbird Bycatch (October 2000) states: “It is the policy of the U.S. Fish and Wildlife Service that the Migratory Bird Treaty Act of 1918, as amended, legally mandates the protection and conservation of migratory birds. The USFWS seeks to

actively expand partnerships with regional, national, and international organizations, States, tribes, industry, and environmental groups to address seabird bycatch in fisheries, by promoting public awareness of waterbird bycatch issues, and facilitating the collection of scientific information to develop and provide guidelines for management, regulation, and compliance.”

Birds of Management Concern are a subset of MBTA-protected species which pose special management challenges because of a variety of factors (e.g., too few, too many, conflicts with human interests, societal demands). These species are of concern because of: documented or apparent population declines; small or restricted populations; dependence on restricted or vulnerable habitats; or overabundant to the point of causing ecological and economic damage.

7.4. Protected Species with Potential Fishery Interactions

The management unit of the cobia Atlantic Migratory Group extends from the Georgia/Florida line through New York. There are numerous protected species that inhabit the range of the cobia management unit covered under this FMP. Listed below are ESA and MMPA protected species found in coastal and offshore waters of the Atlantic Ocean within the range of cobia fisheries. USFWS species of management concern that have the potential to interact with cobia fisheries are also listed. Species of management concern are protected under the MBTA, but lack the protections mandated by the ESA.

ESA – Endangered¹

- Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), NY Bight, Chesapeake Bay, Carolina, and South Atlantic Distinct Population Segments (DPSs)²
- Shorthnose sturgeon (*Acipenser brevirostrum*)
- Smalltooth sawfish (*Pristis pectinata*)
- Blue whale (*Balaenoptera musculus*)
- Fin whale (*Balaenoptera physalus*)
- Humpback whale (*Megaptera novaeangliae*)
- North Atlantic right whale (*Eubalaena glacialis*)
- Sei whale (*Balaenoptera borealis*)
- Sperm whale (*Physeter microcephalus*)
- Hawksbill sea turtle (*Eretmochelys imbricata*)
- Kemp’s ridley sea turtle (*Lepidochelys kempii*)
- Leatherback sea turtle (*Dermochelys coriacea*)
- Bermuda petrel (*Pterodroma cahow*)

1 <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm>

2 A distinct population segment (DPS) is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. The ESA provides for listing species, subspecies, or DPS of vertebrate species.

- Roseate tern (*Sterna dougallii dougallii*), northeastern U.S. and Nova Scotia breeding population

ESA – Threatened³

- Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), Gulf of Maine DPS
- Nassau grouper (*Epinephelus striatus*)
- Green sea turtle (*Chelonia mydas*), North Atlantic and South Atlantic DPSs
- Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic Ocean DPS
- Roseate tern (*Sterna dougallii dougallii*), Southeastern U.S. and Caribbean breeding population (FL, GA, NC, SC, Puerto Rico, Virgin Islands)
- Piping plover (*Charadrius melodus*)

MMPA – Protected⁴

Includes all marine mammals above in addition to:

- Atlantic spotted dolphin (*Stenella frontalis*)
- Bottlenose dolphin (*Tursiops truncatus*)
- Atlantic white-sided dolphin (*Lagenorhynchus acutus*)
- Clymene dolphin (*Stenella clymene*)
- Pantropical spotted dolphin (*Stenella attenuata*)
- Risso's dolphin (*Grampus griseus*)
- Rough-toothed dolphin (*Steno bredanensis*)
- Short-beaked common dolphin (*Delphinus delphis*)
- Spinner dolphin (*Stenella longirostris*)
- Striped dolphin (*Stenella coeruleoalba*)
- Gray seal (*Halichoerus grypus*)
- Harbor porpoise (*Phocoena phocoena*)
- Harbor seal (*Phoca vitulina*)
- Minke whale (*Balaenoptera acutorostrata*)
- Cuvier's beaked whale (*Ziphius cavirostris*)
- Gervais' beaked whale (*Mesoplodon europaeus*)
- True's beaked whale (*Mesoplodon mirus*)
- Bryde's whale (*Balaenoptera edeni*)
- Dwarf sperm whale (*Kogia sima*)
- False killer whale (*Pseudorca crassidens*)
- Killer whale (*Orcinus orca*)
- Long-finned pilot whale (*Globicephala melas*)
- Melon-headed whale (*Peponocephala electra*)

3 <http://www.nmfs.noaa.gov/pr/species/esa/listed.htm>

4 <http://www.nmfs.noaa.gov/pr/species/mammals>

- Pygmy killer whale (*Feresa attenuate*)
- Pygmy sperm whale (*Kogia breviceps*)
- Short-finned pilot whale (*Globicephala macrorhynchus*)

ESA – Species of Concern⁵

- Alewife (*Alosa pseudoharengus*)
- Blueback herring (*Alosa aestivalis*)
- Dusky shark (*Carcharhinus obscurus*)
- Porbeagle shark (*Lamna nasus*)
- Rainbow smelt (*Osmerus mordax*)
- Sand tiger shark (*Carcharias taurus*)
- Speckled hind (*Epinephelus drummondhayi*)
- Striped croaker (*Bairdiella sanctaeluciae*)
- Warsaw grouper (*Epinephelus nigritus*)

MBTA—USFWS Species of Management Concern

- Canvasback (*Aythya valisineria*)
- Redhead (*Aythya americana*)
- Greater scaup (*Aythya marila*)
- Lesser scaup (*Aythya affinis*)
- Surf scoter (*Melanitta perspicillata*)
- White-winged scoter (*Melanitta fusca*)
- Black scoter (*Melanitta americana*)
- Long-tailed duck (*Clangula hyemalis*)
- Common goldeneye (*Bucephala clangula*)
- Red-throated loon (*Gavia stellata*)
- Black-capped petrel (*Pterodroma hasitata*)
- Greater shearwater (*Puffinus gravis*)
- Audubon’s shearwater (*Puffinus lherminieri*)
- Band-rumped storm-petrel (*Oceanodroma castro*)
- Masked booby (*Sula dactylaria*)
- Brown booby (*Sula leucogaster*)
- Pied-billed grebe (*Podilymbus podiceps*)
- Horned grebe (*Podiceps auritus*)
- Magnificent frigatebird (*Fregata magnificens*)
- Least tern (*Sternula antillarum*), non-listed Atlantic coast subspecies
- Gull-billed tern (*Gelochelidon nilotica*)

⁵ <http://www.nmfs.noaa.gov/pr/species/concern/>

7.5. Protected Species Interactions with Existing Fisheries

7.5.1. Brief overview of the Cobia fishery and gears used

Recreational fisheries are prosecuted similarly along the coast. The directed cobia fishery is prosecuted in two distinct ways. Bottom fishing with live or dead baits, often while chumming, in estuarine waters or around inlets or offshore around structure, buoys, markers, natural and artificial reefs. More recently, an active method of searching for fish traveling alone or in small groups on the surface or associated with schools of Atlantic menhaden or other bait fishes has grown in popularity. This newer method has resulted in the further development of the for-hire sector for cobia, as well as the development of specific artificial baits and boat modifications (e.g., towers) to facilitate spotting and catching the fish. A third method primarily prosecuted in offshore waters is to target large rays, large sharks, sea turtles or floating debris around which cobia congregate. Additionally, the Atlantic coast of Florida is starting to see more directed spearfishing pressure on cobia. Specifically, spearfishers are chumming for bull shark and then diving/free-diving to spear cobia that associate with them. Spearfishing also occurs off North Carolina, along with a popular pier fishery.

The recreational fishery also takes cobia as bycatch in offshore bottom fisheries such as snapper/grouper, nearshore trolling for king mackerel, bluefish, and dolphin and any other fishery that employs live or dead bait fished on or near the bottom. While the directed fishery appears to focus more on the spring-summer spawning migration, bycatch, especially offshore, can yield cobia virtually year round. The average recreational cobia landings in Atlantic states north of Florida from 2010-2015 was almost 800,000lb.⁶

The commercial fishery has traditionally been a bycatch in other directed fisheries such as the snapper/grouper hook and line fishery and troll fisheries for various species (e.g., king mackerel, dolphin, wahoo, amberjack). Directed fisheries are generally precluded as a result of the low possession limits, but do occur, specifically Virginia's commercial hook and line fishery. Cobia from for-hire trips may also be sold commercially, depending on the state's permit requirements for selling fish. According to the 2015 biological opinion conducted for the Coastal Migratory Pelagic (CMP) resources in the Atlantic and Gulf of Mexico (GOM), in 2013, the predominant gear types used to capture cobia commercially were hook-and-line (78.2%), followed by diving (i.e., spearfishing; 10.4%), longline (7.5%), and gill net (2.5%); all other gears each accounted for less than 0.5% of the total catch (NMFS, 2015). The average commercial cobia landings in Atlantic states north of Florida from 2010-2015 was 56,158 lbs (ASMFC, 2016). In 2015, the predominant gear types that were used to capture cobia in the Atlantic north of Florida were hook-and-line (46%), gill net (44%), pound net (9%), and unknown gear type (1%)⁷.

6 SEFSC, recreational ACL dataset

7 <http://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/landings-by-gear/index>

7.5.2. Marine Mammals

NMFS completed a biological opinion on June 18, 2015, evaluating the impacts of the CMP fishery on ESA-listed species. In the biological opinion, NMFS determined that the proposed continued authorization of the CMP Fishery, is not likely to adversely affect any listed whales (i.e., blue, sei, sperm, fin, humpback, or North Atlantic right whales). NMFS also determined that the CMP fishery will have no effect on designated critical habitat for North Atlantic right whale (NMFS, 2015).

The Gulf and South Atlantic CMP hook-and-line fishery (which includes fisheries that capture cobia) is classified in the 2017 MMPA List of Fisheries as a Category III fishery (82 FR 3655; January 12, 2017). This means the annual mortality and serious injury of a marine mammal resulting from the fishery is less than or equal to 1% of PBR, the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. In other words, there is a remote likelihood of or no known incidental mortality and serious injury of marine mammals resulting from these fisheries.

The Gulf and South Atlantic CMP gillnet fishery is classified as Category II fishery in the 2017 MMPA List of Fisheries. This classification indicates an occasional incidental mortality or serious injury of a marine mammal stock resulting from the fishery (1-50% annually of PBR). The fishery has no documented interaction with marine mammals; NMFS classifies this fishery as Category II based on analogy (i.e., similar risk to marine mammals) with other gillnet fisheries.

7.5.3. Sea Turtles

7.5.3.1. Overview

As mentioned above, the NMFS completed a biological opinion on June 18, 2015, evaluating the impacts of the CMP fishery (including King mackerel, Spanish mackerel, and cobia) on ESA-listed species (NMFS, 2015). According to the biological opinion, green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all likely to be adversely affected by the CMP fishery. Green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles are all highly migratory, travel widely throughout the GOM and South Atlantic, and are known to occur in area of the fishery. The biological opinion evaluated the potential for the following gears to interact with protected species: hook-and-line gear, cast net gear, and gill net gear. The biological opinion found that gill net gear is the only gear used in the CMP fisheries that may adversely affect sea turtles. Gill net gear is used to target both Spanish and king mackerel, but not cobia.

7.5.3.2. Hook-and-line fishing

The 2015 biological opinion for CMP resources concluded that sea turtles (as well as smalltooth sawfish and Atlantic sturgeon) are not likely to be adversely affected by CMP hook-and-line fishing. The 2015 biological opinion stated: *“The hook-and-line gear used by both commercial and recreational fishers to target CMP species is limited to trolled or, to a much lesser degree (e.g., historically ~2% by landings for king mackerel), jigged handline, bandit, and rod-and-reel gear. Sea turtles, Atlantic sturgeon, and smalltooth sawfish are both vulnerable to capture on hook-and-line gear, but the techniques commonly used to target CMP species makes effects on these listed species extremely unlikely and, therefore, discountable. Sea turtles are unlikely to be caught during hook-and-line trolling because of the speed (4-10 kt) at which the lure is pulled through the water. As cedar plugs and spoons are generally used when trolling, it is unlikely that a sea turtle of any size would actively pursue the gear and get hooked. Likewise, we also believe sea turtles would be unlikely to be snagged by jigged gear as it is deployed at or near the surface and constantly reeled and jigged back to the boat. It is possible that a sea turtle could be incidentally snagged if it comes in contact with a trolled or jigged hook, but the chances of this occurring are extremely low... We believe that CMP species caught on bandit gear or standard rod-and-reel gear (i.e., baited and deployed as passive, vertical gear) are largely bycatch when targeting other species closer to the bottom (e.g., snapper and grouper); use of the gear in this method (i.e., mid-water placement) is not effective at catching mackerel based on available information (e.g., landings data). In summary, we believe effects from these gear types on Atlantic sturgeon, smalltooth sawfish, and sea turtles are extremely unlikely to occur, and are therefore discountable”* (NMFS, 2015).

There is limited information about protected species interactions within recreational fisheries. In 2015, The North Carolina Division of Marine Fisheries conducted a project funded under the ACCSP to examine potential protected species interactions and finfish discards and releases in the recreational cobia hook-and-line fishery. Observations were made via an alternative observer platform, where recreational fishing activity was monitored at close proximity from individuals on state owned vessels. From April 27, 2015, through October 29, 2015, 552 recreational hook-and-line observations (observed fishing trips) were completed over 138 observed fishing days with 16.2% of fishing trips targeting cobia. Observations occurred in inshore (estuarine) and near-shore waters (≤ 3 miles) of Carteret County. No protected species interactions were observed (Boyd 2016).

7.5.3.3. Gill net

Cobia are generally considered a bycatch species within gill net fisheries. The 2015 biological opinion for CMP resources concluded that gill net gear used in the federal CMP fisheries of the Atlantic and GOM have adversely affected sea turtles, smalltooth sawfish, and Atlantic sturgeon in the past via entanglement and, in the case of sea turtles, via forced submergence (NMFS, 2015).

7.5.3.4. Targeting of large animals

One known method used to prosecute cobia in offshore waters is to target large rays, large sharks, sea turtles, or floating debris around which cobia congregate. Not much is known about this method or its impacts on protected species.

7.5.4. Sturgeon, smalltooth sawfish, Nassau grouper

The 2015 biological opinion for CMP resources concluded that gill net gear used in the federal CMP fisheries of the Atlantic and GOM have adversely affected smalltooth sawfish⁸ and Atlantic sturgeon in the past via entanglement.

The biological opinion also concluded that smalltooth sawfish and Atlantic sturgeon are not likely to be adversely affected by CMP hook-and-line fishing. Fishers who capture smalltooth sawfish most commonly report that they were fishing for snook, redfish, or sharks (Simpfendorfer and Wiley 2004), not CMP species. Additionally, Atlantic sturgeon and smalltooth sawfish are largely bottom-dwelling species, whereas CMP lures and baits are typically fished near the surface of the water. This also greatly reduces the likelihood of Atlantic sturgeon and smalltooth sawfish interactions with trolling gear (NMFS, 2015).

On June 29, 2016, NMFS published a final rule listing Nassau grouper as threatened under the ESA. Reinitiation of Section 7 consultation on the CMP FMP is needed to address newly listed species. NMFS is currently prioritizing completion of the consultation along with other consultations required after recent listings.

7.5.5. Seabirds

The roseate tern, Bermuda petrel, and piping plover are the only ESA listed bird species within the mid-and south-Atlantic maritime regions. The roseate tern and Bermuda petrel are uncommon in inshore and coastal waters of the mid- and south-Atlantic and thus, have relatively low likelihoods of interacting with cobia fisheries. Nevertheless, exceptional efforts to avoid deleterious interactions with these species are warranted as they are rare and highly vulnerable to even minimal levels of mortality. The piping plover could be impacted by shore-based fishing activity if individuals were disturbed or killed by vehicles related to fishing efforts. However, during the nesting season, when plovers are highly vulnerable to beach disturbance, sensitive areas are posted and beach access is often restricted.

Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North Carolina and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished USFWS data). Interaction with fisheries has not been reported as a concern for

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

either of these species. Although, the Bermuda petrel and roseate tern occur within the action area, these species are not commonly found and neither has been described as associating with vessels or having had interactions with the CMP fishery. Framework Amendment 4 to the FMP for CMP resources in the Gulf of Mexico and Atlantic Region concluded that the CMP fishery is not likely to negatively affect the Bermuda petrel and the roseate tern.

7.6. Population Status Review of Relevant Protected Species

7.6.1. Marine Mammals

The status review of marine mammal populations inhabiting the Southwest Atlantic are discussed in detail in U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments. The most recent assessment was published in 2016 (Waring et al. 2016). The report presents information on stock definition, geographic range, population size, productivity rates, PBR, fishery specific mortality estimates, and compares the PBR to estimated human-caused mortality and serious injury for each stock.

7.6.2. Sea Turtles

All sea turtles that occur in U.S. waters are listed as either endangered or threatened under the ESA. The Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*) are listed as endangered. The Northwest Atlantic Ocean DPS of loggerhead turtles (*Caretta caretta*) and the North Atlantic and South Atlantic DPSs of green turtle (*Chelonia mydas*) are listed as threatened. All five of these species inhabit the waters of the U.S. Atlantic and Gulf of Mexico.

Atlantic coastal waters provide important developmental, migration, and feeding habitat for sea turtles. The distribution and abundance of sea turtles along the Atlantic coast is related to geographic location, reproductive cycles, food availability, and seasonal variations in water temperatures. Water temperatures dictate how early northward migration begins each year and are a useful factor for assessing when turtles will be found in certain areas. Sea turtles can occur in offshore as well as inshore waters, including sounds and embayments. More information about sea turtles can be found here:

<http://www.nmfs.noaa.gov/pr/species/turtles/index.html>.

7.6.3. Sturgeon, smalltooth sawfish, and Nassau grouper

No estimate of the historical population size of shortnose sturgeon is available. While the shortnose sturgeon was rarely the target of a commercial fishery, it often was taken incidentally in the commercial fishery for Atlantic sturgeon. In the 1950s, sturgeon fisheries declined on the east coast, which resulted in a lack of records of shortnose sturgeon. Shortnose sturgeon has

been listed as endangered since 1967. A status assessment of shortnose sturgeon was last published in 2010 (SSSRT, 2010).⁹

In 2012, NOAA Fisheries listed four DPSs of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) as endangered (NY Bight, Chesapeake Bay, Carolina, and South Atlantic DPSs) and one as threatened (Gulf of Maine). More information about Atlantic sturgeon can be found here: <http://www.fisheries.noaa.gov/pr/species/fish/atlantic-sturgeon.html#documents>.

The U.S. DPS of smalltooth sawfish was listed as endangered in 2003. No accurate estimates of abundance trends over time are available, but available data, including museum records and anecdotal observations from fishers, indicate that the population has declined dramatically by about 95%. Smalltooth sawfish were once common throughout their historic range, but they have declined dramatically in U.S. waters over the last century. Still, there are few reliable data available, and no robust estimates of population size exist.¹⁰

In 2016, NOAA Fisheries listed Nassau grouper as threatened under the ESA (81 FR 42268; June 29, 2016). While the species still occupies its historical range, overutilization through historical harvest has reduced the number of individuals which in turn has reduced the number and size of spawning aggregations. Although harvest of Nassau grouper has diminished due to management measures, the reduced number and size of spawning aggregations and the inadequacy of law enforcement continue to present extinction risk to Nassau grouper. The Nassau grouper's confirmed distribution currently includes Bermuda and Florida (U.S.A.), throughout the Bahamas and Caribbean Sea. Many earlier reports of Nassau grouper up the Atlantic coast to North Carolina have not been confirmed.

7.6.4. Seabirds

The overall population status of the Bermuda Petrel is unknown. The Bermuda Petrel is a pelagic seabird, and its range and distribution at sea make it very difficult to survey. It is known to nest only on five small islets in Bermuda. Surveys are limited to the breeding grounds. The total population of the Bermuda Petrel is estimated as 101 breeding pairs (USFWS, 2013).

The roseate tern is a federally protected and endangered seabird that is mainly found in the Northern Hemisphere on the northeastern coast of North America, extending from Nova Scotia to the southern tip of Florida, as well as several islands in the Caribbean Sea. Populations in the northeastern U.S. greatly declined in the late 19th century due to hunting for the millinery, or hat trade. In the 1930s, protected under the MBTA, the population reached a high of about 8,500, but since then, population numbers have declined and stayed in the low range of 2,500 to 3,300. The species was listed in 1987 as endangered in the northeastern U.S. Populations in

9 <http://www.fisheries.noaa.gov/pr/species/fish/shortnose-sturgeon.html>

10 <http://www.fisheries.noaa.gov/pr/species/fish/smalltooth-sawfish.html>

Florida, Georgia, North Carolina, Puerto Rico, South Carolina and the Virgin Islands are listed as threatened.¹¹

The piping plover breeds on coastal beaches from Newfoundland and southeastern Quebec to North Carolina. These birds winter primarily on the Atlantic Coast from North Carolina to Florida, although some migrate to the Bahamas and West Indies. Piping plovers were common along the Atlantic Coast during much of the 19th century, but nearly disappeared due to excessive hunting for the millinery trade. The current population decline is attributed to increased development and recreational use of beaches. The most recent surveys place the Atlantic population at less than 2000 pairs.¹²

7.7. Existing and Proposed Federal Regulations/Actions Pertaining to Relevant Protected Species

7.7.1. Marine Mammals

Species of large whales protected by the ESA that occur throughout the Atlantic Ocean include the blue whale, humpback whale, fin whale, North Atlantic right whale, sei whale, and the sperm whale. Additionally, the West Indian manatee also occurs in both the Gulf of Mexico and the Atlantic Ocean. These species are also considered depleted under the Marine Mammal Protection Act (MMPA). Depleted and endangered designations afford special protections from captures, and further measures to restore populations to recovery or the optimum sustainable population are identified through required recovery (ESA species) or conservation plans (MMPA depleted species). Numerous other species of marine mammals listed under the MMPA occur throughout the Atlantic Ocean.

The MMPA mandates NOAA's NMFS to develop and implement Take Reduction Plans for preventing the depletion and assisting in the recovery of certain marine mammal stocks that are seriously injured or killed in commercial fisheries. In the Atlantic, the following Take Reduction Plans have been developed, which address in part, gears that have been used to capture cobia (gillnet):

- The Atlantic Large Whale Take Reduction Plan is designed to reduce the risk of mortality and serious injury of large whales (right, fin, humpback) incidental to U.S. commercial trap/pot and gillnet fisheries, including Southeast Atlantic gillnet.
- The Bottlenose Dolphin Take Reduction Plan is designed to reduce the incidental mortality and serious injury of the western North Atlantic coastal bottlenose dolphin stock in several coastal fisheries, including the Southeast Atlantic gillnet fishery.

11 <https://www.fws.gov/northeast/pdf/Roseateatern0511.pdf>

12 <https://www.fws.gov/northeast/pipingplover/overview.html>

7.7.2. Sea turtles

Under the ESA, and its implementing regulations, taking sea turtles – even incidentally – is prohibited, with exceptions identified in 50 CFR 223.206. The incidental take of endangered species may only legally be authorized by an incidental take statement or an incidental take permit issued pursuant to Section 7 or 10 of the ESA, respectively. According to the 2015 biological opinion on CMP fisheries, green, hawksbill, Kemp’s ridley, leatherback, and loggerhead sea turtles are all likely to be adversely affected by the CMP fishery (NMFS, 2015). Green, hawksbill, Kemp’s ridley, leatherback, and loggerhead sea turtles are all highly migratory, travel widely throughout the GOM and South Atlantic, and are known to occur in the area of the fishery. The 2015 biological opinion for CMP established an incidental take statement with reasonable and prudent measures and terms and conditions for incidental take coverage in the federal CMP fisheries for sea turtles takes throughout the action area.

On April 6, 2016, NMFS published a final rule (81 FR 20058) listing 11 distinct population segments (DPSs) for green sea turtles. The listing of the DPSs of green turtles triggers reinitiation of consultation under Section 7 of the ESA because the previous opinion did not consider what effects the CMP fishery is likely to have on this species, therefore NMFS must analyze the impacts of these potential interactions. NMFS is also in the process of identifying critical habitat, which will be proposed in a future rulemaking.

In 2013, the North Carolina Division of Marine Fisheries was issued a [permit](#) for the incidental take of listed sea turtles associated with the otherwise lawful large and small mesh gill net fishing in specified inshore estuarine areas. This permit requires North Carolina to close designated areas to avoid approaching the take limit.

Existing NMFS regulations specify procedures that NMFS may use to determine that unauthorized takings of sea turtles occur during fishing activities, and to impose additional restrictions to conserve sea turtles and to prevent unauthorized takings (50 CFR 223.206(d)(4)). Restrictions may be effective for a period of up to 30 days and may be renewed for additional periods of up to 30 days each. In 2007, NMFS issued a regulation (50 CFR 222.402) to establish procedures through which each year NMFS will identify, pursuant to specified criteria and after notice and opportunity for comment, those fisheries in which the agency intends to place observers (72 FR 43176, August 3, 2007). NMFS issues a notice or regulation each year maintaining or updating the fisheries listed on the annual determination. The most recent determination was in December 2016 (81 FR 90330, December 14, 2016). NMFS may place observers on U.S. fishing vessels, either recreational or commercial, operating in U.S. territorial waters, the U.S. exclusive economic zone (EEZ), or on the high seas, or on vessels that are otherwise subject to the jurisdiction of the U.S. Failure to comply with the requirements under this rule may result in civil or criminal penalties under the ESA.

7.7.3. Sturgeon, smalltooth sawfish, and Nassau grouper

Shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*A. oxyrinchus*) were listed under the ESA in 1967 and 2012, respectively. The Commission and federal government

implemented a coastwide moratorium on sturgeon harvest in late 1997 and early 1998. Bycatch remains an important issue in the recovery of Atlantic sturgeon populations throughout their range (ASMFC 2007). The National Marine Fisheries Service established a recovery plan for shortnose sturgeon in 1998.¹³

In 2013, the Georgia Department of Natural Resources was issued a permit for the incidental take of shortnose and Atlantic sturgeon associated with the otherwise lawful commercial shad fishery in Georgia. In 2014, the North Carolina Division of Marine Fisheries was issued a permit for the incidental take of Atlantic sturgeon DPSs associated with the otherwise lawful commercial inshore gillnet fishery in North Carolina.

The 2015 biological opinion for the Federal CMP fisheries established an incidental take statement with reasonable and prudent measures and terms and conditions for incidental take of Atlantic sturgeon (as well as sea turtles and smalltooth sawfish) throughout the action area (NMFS, 2015). In June 2016, NOAA Fisheries published proposed rules to designate critical habitat for Atlantic sturgeon (81 FR 36077; 6/3/2016 and 81 FR 35701; 6/3/2016).

The U.S. DPS of smalltooth sawfish was listed as endangered in 2003. Critical habitat was designated for it in 2009 (74 FR 45353; 9/2/2009) and a recovery plan was finalized in 2009 as well.¹⁴

Harvest and possession of Nassau grouper is prohibited in the United States, Puerto Rico, and the U.S. Virgin Islands. NMFS is evaluating potential management actions, such as critical habitat or application of the 4(d) rule in the ESA. When NMFS listed Nassau grouper as threatened, it solicited information from the public that may be relevant to the designation of critical habitat for Nassau grouper. A 4(d) rule provides regulations necessary for the conservation of any threatened species

7.7.4. Seabirds

Under the ESA and its regulations, take of Bermuda petrels, roseate terns, and piping plovers, even incidentally, is prohibited. The incidental take of an ESA listed species may only be legally authorized by an incidental take statement or incidental take permit issued pursuant to Section 7 or 10 of the ESA. No incidental takes of ESA listed bird species is currently authorized for cobia fisheries.

Section 316(c) of the Magnuson-Stevens Fishery Conservation and Management Act authorizes the Interior and Commerce Departments to undertake projects, in cooperation with industry, to improve information and technology to reduce seabird-fisheries interactions. USFWS seeks to partner with State, regional, and Federal agencies; industry; tribes; and NGOs to facilitate outreach and improve information and technology to reduce seabird bycatch in fisheries within state and Federal waters. A Memorandum of Understanding between NMFS and the USFWS

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

14 <http://www.nmfs.noaa.gov/pr/pdfs/recovery/smalltoothsawfish.pdf>

(July 2012) describes additional collaborative efforts recommended to better understand and reduce bird bycatch in fisheries.¹⁵

Most actions to understand and reduce marine bird bycatch in the U.S. have occurred in Pacific waters. However, in 2011, the USFWS issued a business plan for addressing and reducing marine bird bycatch in U.S. Atlantic fisheries. The plan identified priority goals and actions to target the following marine bird-fisheries interactions: greater shearwaters in the New England groundfish fishery, and red-throated loons in the mid-Atlantic gillnet fisheries.¹⁶

7.8. Potential Impacts to Atlantic Coastal State and Interstate Fisheries

Regulations under the take reduction plans for Atlantic large whales and bottlenose dolphins have the potential to impact gill net fisheries that capture cobia as bycatch.

7.9. Identification of Current Data Gaps and Research Needs

7.9.1. General Bycatch Related Research Needs

The following activities would improve our understanding of bycatch of fish and protected species in the Southeast Region. These activities were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan¹⁷:

- In coordination with the Marine Recreational Information Program (MRIP), test and validate the use of on-board recording systems (e.g., electronic logbooks) for capturing information on discarded fishes and bycatch of protected species in the commercial and recreational fisheries including species, length, depth, location, and disposition; priority fisheries include shrimp (including assessing TED compliance), South Atlantic snapper-grouper, other Southeast Region recreational hook-and-line fisheries, and fisheries under take reduction teams.
- Enhance existing tools (e.g., observers, logbook requirements, electronic technologies) to collect bycatch data that inform agency bycatch priorities; priority fisheries include shrimp (including assessing TED compliance), South Atlantic snapper-grouper, other Southeast Region recreational hook-and-line fisheries, and fisheries under take reduction teams.
- Invest in new, innovative fishery monitoring techniques, such as electronic fishing logbooks and video monitoring, to provide a cost effective means of producing more information to effectively quantify bycatch; priority fisheries include shrimp (including assessing TED compliance), South Atlantic snapper-grouper, other Southeast Region recreational hook-and-line fisheries, and fisheries under take reduction teams.

15 <https://www.fws.gov/migratorybirds/pdf/management/mounmfs.pdf>

16 <https://www.fws.gov/migratorybirds/pdf/management/focal-species/GreaterShearwater.pdf>

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

- Improve the discard estimates needed for informing snapper-grouper, reef fish, dolphin wahoo, and coastal migratory pelagic SEDAR assessments in the next 3-5 years.

7.9.2. Marine Mammals

The following bycatch related research needs were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan¹⁸:

- Characterize frequency, scope, and scale of bottlenose dolphin interactions with recreational rod/reel fishing gear.
- Enhance and increase observer coverage for gillnet fisheries under the bottlenose dolphin take reduction plans by focusing observer coverage in specific geographic areas and fisheries, improving observer data collection and quality, and measures of fishing effort, as well as coordinating with state observer programs.
- Experimentally investigate possible attractants/deterrents for pilot whale/Risso's dolphins to pelagic longline gear and gear modifications to decrease the likelihood of hooking and/or entanglement.

7.9.3. Sea Turtles

Observer coverage of recreational fisheries has been relatively limited (Boyd, 2016). Expansion of observer programs to recreational hook-and-line fisheries would help determine the level of protected species interactions in those fisheries.

The following bycatch related research needs were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan¹⁹:

- Improved methods/models/techniques for estimating sea turtle bycatch in commercial fisheries including accounting for life stage and recovery unit (where applicable) impacts.
- Produce annual bycatch estimates for the shrimp trawl fisheries, pelagic longline, Gulf and South Atlantic reef fish, and Gulf and South Atlantic shark gillnet and bottom longline fisheries.
- Implement monitoring program to assess bycatch of sea turtles in recreational fisheries, including piers, jetties, head boats and FMP covered recreational fisheries.
- Develop tools to reduce recreational fishing bycatch including on piers/jetties.
- Develop and improve analytic methods for sea turtle bycatch estimation and sampling design to optimally allocate observer coverage and identify gaps and recommend improvements/changes to improve sea turtle bycatch information.

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

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

- Ensure sea turtle bycatch data collected across fisheries is standardized and contains all necessary elements to assess post interaction mortality and to inform conservation management.
- Conduct gear research and technology transfer to reduce sea turtle interactions and mortalities in both domestic and foreign trawl, longline, and gill net fisheries.
- Develop sea turtle observer programs for commercial fisheries not currently observed but for which data are needed.

7.9.4. Sturgeon

NOAA Fisheries Southeast Regional Office has identified the following research needs for Atlantic sturgeon²⁰:

- Identification of spawning and nursery grounds and overwintering areas.
- Long-term population monitoring programs.
- Population genetics.
- Toxic contaminant and biotoxin impacts and thresholds.
- Develop fish passage devices for sturgeon.
- Impacts of dredging.
- Reducing bycatch and bycatch mortality.

Regarding bycatch, very little information is available on current levels of bycatch and bycatch mortality occurring in fisheries in the Southeast. Research is needed to identify the spatial and temporal distribution of bycatch throughout the species range, and to identify measures that can be implemented to reduce bycatch and/or bycatch mortality.

NOAA Fisheries Southeast Regional Office has identified the following research needs for shorthnose sturgeon²¹:

- Genetic assessments.
- Surveys and presence/absence studies.
- Identification of spawning and nursery grounds and overwintering areas.
- Develop fish passage devices for sturgeon.
- Contaminant research.
- Impacts of dredging.

20 http://sero.nmfs.noaa.gov/protected_resources/sturgeon/documents/ats_research_priorities.pdf

21 http://sero.nmfs.noaa.gov/protected_resources/sturgeon/documents/sns_research_priorities.pdf

7.9.5. Sawfish

The following research needs were identified within NMFS' Southeast Regional Office's FY16-20 Strategic Plan²²:

- Develop a functional assessment model of juvenile sawfish habitat use within the critical habitat units.
- Determine the post-release mortality of sawfish from various types of fishing gear.
- Investigate movements (short-term and seasonal) of adult sawfish to identify aggregation habitats and habitat use patterns.
- Develop habitat models to identify potential sawfish nursery habitats in areas unsurveyed or outside of the currently known habitat areas.
- Continue current sawfish surveys as these will be the basis of monitoring recovery.
- Conduct juvenile sawfish surveys beyond the boundaries of current surveys (e.g., east coast or north of Charlotte Harbor) to refine a baseline abundance estimates and monitor recovery.
- Conduct adult surveys throughout the range of smalltooth sawfish to determine a relative abundance estimate, the distribution of adults, and to identify sawfish mating and pupping habitats.

7.9.6. Seabirds

- Initiate and expand observer coverage/bycatch monitoring and collection and analysis of bird bycatch data to better understand extent of bird bycatch and identify bycaught bird species within the target fisheries (state waters).
- Collaborate with fishermen to develop and test gear and identify deployment practices that reduce bird bycatch within the target fisheries (state waters).
- Conduct outreach activities to facilitate sharing of bird bycatch information in the target fisheries among agencies, industry and the public.

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

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9. APPENDICES

Appendix I

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

Introduction

The Atlantic States Marine Fisheries Commission (Commission) is developing an Interstate Fishery Management Plan (FMP) for Cobia, under the authority of the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA). Management authority for this species is from zero to three nautical miles offshore, including internal state waters, and lies with the Commission. Regulations are promulgated by the Atlantic coastal states. Responsibility for compatible management action in the exclusive economic zone (EEZ) from 3-200 miles from shore lies with the South Atlantic Fishery Management Council (Council) and NOAA Fisheries under their Coastal Migratory Pelagics Fishery Management Plan (CMP FMP) under the authority of the Magnuson-Stevens Fisheries Conservation and Management Act.

Management Issues

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

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

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

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

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

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

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

Purpose of the Public Information Document (PID)

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

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

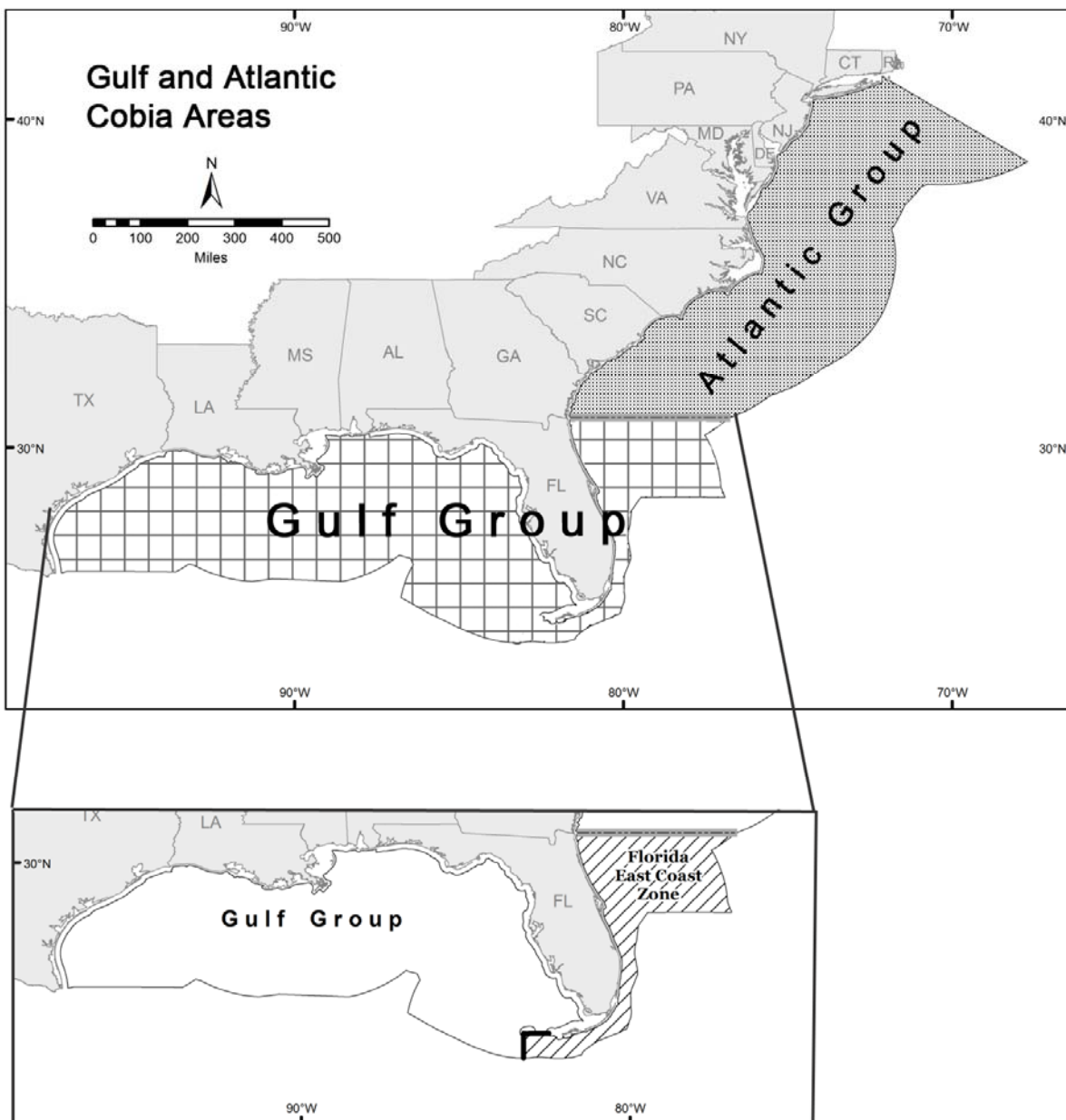


Figure 1. Current jurisdictional boundaries for Atlantic and Gulf of Mexico migratory groups of Cobia.

ASMFC's FMP Process and Timeline

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

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

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

Statement of the Problem

Cobia management has historically been considered precautionary through the Gulf of Mexico and Atlantic Coastal Migratory Pelagics FMP. Both sectors of the fishery have been managed with a 2 fish possession limit and 33" fork length (FL) minimum size since formal management began in Amendment 6 to the Coastal Migratory Pelagics FMP in 1990. The ACLs and AMs were established through Amendment 18 (GMFMC/SAFMC 2012). The 2013 stock assessment conducted through the Southeast Data Assessment and Review (SEDAR) process indicated overfishing was not occurring and that the stock was not overfished although trending steadily downward over the previous two decades. Additionally, the stock assessment used a different stock boundary that was implemented into the FMP along with the updated ACLs in Amendment 20B (GMFMC/SAFMC 2014). The current ACL is a precautionary approach to prevent the stock from reaching an overfished status. The recent overage in 2015 exceeded the Council's defined Overfishing Limit, meaning the stock is undergoing overfishing. Further quota overages would continue this overfishing and could lead to the stock becoming overfished.

Efforts to more closely monitor state specific harvest to ensure that quotas are not exceeded and that overfishing is averted is the Commission's primary focus. Further, by developing a Commission plan, the impacts of a single, federal closure may be mitigated through state-specific measures designed to maintain traditional seasons at reduced harvest rates. The proposed interstate FMP considers potential management measures to maintain a healthy resource while minimizing the socio-economic impacts of seasonal closures.

Description of Management

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

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

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

*VA State waters close 8/30/16.

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

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

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

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

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

Description of the Cobia Resource

Life History and Status of the Stocks

Cobia is a fast growing, moderately lived (14 years old) species that supports a valuable recreational fishery throughout the south Atlantic and into the mid-Atlantic region. Known for their readiness to take a bait, tough fighting abilities, and excellent table fare, the fishery is popular in the recreational sector. The commercial fishery is primarily a by-catch in other directed fisheries such as the snapper/grouper hook and line fishery, and troll fisheries for various species (e.g., king mackerel, dolphin, wahoo, amberjack). However, in recent years, it has become a targeted species in Virginia's commercial hook and line fishery.

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

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

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

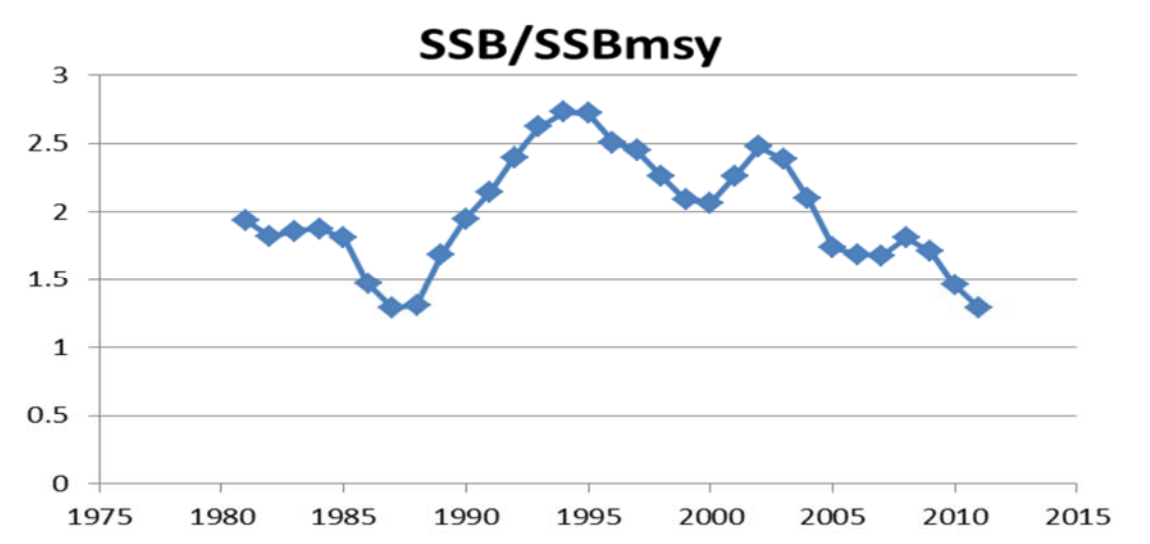


Figure 2. Cobia spawning stock biomass relative to the MSY biomass reference for 1981-2011.

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

Description of the Fishery

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

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

Recreational Cobia fisheries are prosecuted similarly along the coast. The directed Cobia fishery is prosecuted in two distinct ways. Bottom fishing with live or dead baits, often while chumming, in estuarine waters or around inlets or offshore around structure, buoys, markers, natural and artificial reefs. More recently, an active method of searching for fish traveling alone or in small groups on the surface or associated with schools of Atlantic menhaden or other bait fishes has grown in popularity. This newer method has resulted in the further development of the for-hire sector for Cobia, as well as the development of specific artificial baits and boat modifications (e.g., towers) to facilitate spotting and catching the fish. A third method primarily prosecuted in offshore waters is to target large rays, large sharks, sea turtles, or floating debris around which cobia congregate. This more active method likely confounds reported landings being in state or nearshore federal waters as vessels tend to move in and out of state and federal waters following the bait or the fish. Additionally, the Atlantic coast of Florida is starting to see more directed spearfishing pressure on cobia. Specifically, spearfishers are chumming for bull shark and then diving/free-diving to spear the cobia that associate with them. Spearfishing also occurs off North Carolina, along with a popular pier fishery.

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

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

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

| | State GA-NY | Federal GA-NY | Percent State |
|------|-------------|---------------|---------------|
| 2006 | 1,005,706 | 149,537 | 87 |
| 2007 | 402,393 | 374,051 | 52 |
| 2008 | 157,793 | 393,864 | 29 |
| 2009 | 541,594 | 134,935 | 80 |
| 2010 | 679,777 | 232,073 | 75 |
| 2011 | 184,514 | 143,357 | 56 |
| 2012 | 147,273 | 289,154 | 34 |
| 2013 | 590,633 | 172,290 | 77 |
| 2014 | 387,364 | 77,004 | 83 |
| 2015 | 1,496,442 | 232,854 | 85 |

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

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

The recreational fishery also takes Cobia as bycatch in offshore bottom fisheries such as snapper/grouper, nearshore trolling for king mackerel, bluefish, and dolphin, and any other fishery that employs live or dead bait fished on or near the bottom. While the directed fishery appears to focus more on the spring-summer spawning migration, bycatch, especially offshore, can yield Cobia virtually year-round.

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

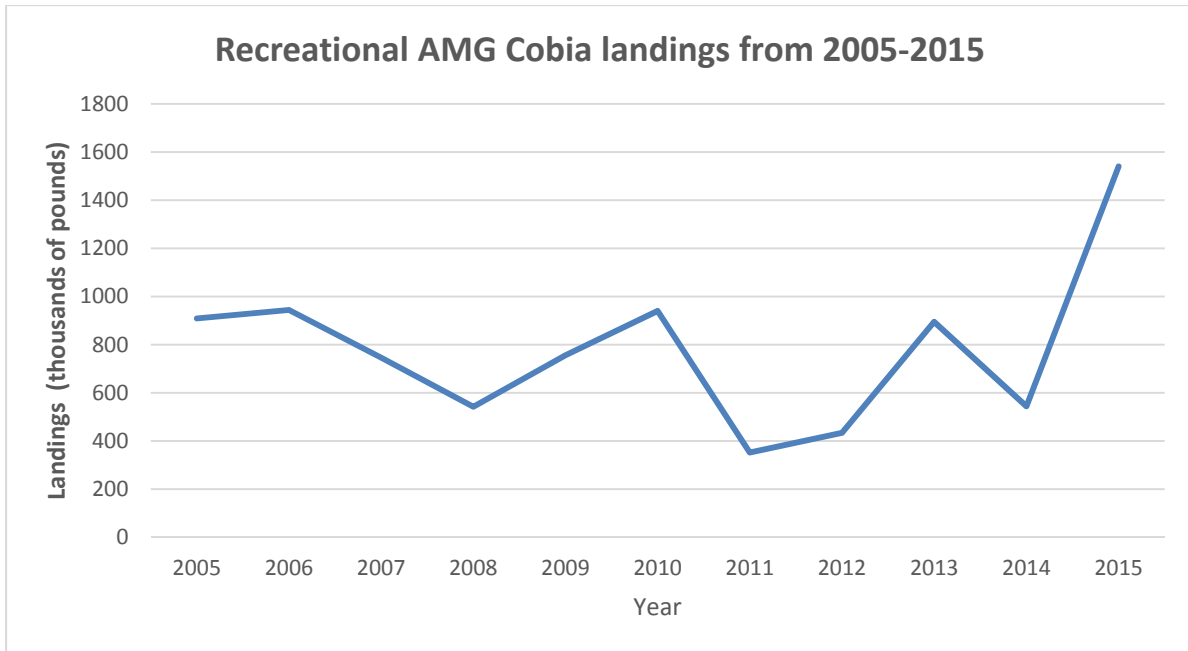


Figure 3. Recreational landings of AMG Cobia (2005-2015)

Commercial harvest of Cobia has traditionally been bycatch in the offshore snapper/grouper and trolling fisheries. Directed fisheries are generally precluded as a result of the low possession limits, but do occur, specifically Virginia’s commercial hook and line fishery. Cobia from for-hire trips may also be sold commercially, depending on the state’s permit requirements for selling fish. The commercial fishery has seen an increasing trend from North Carolina through the mid-Atlantic over the time series. The commercial Cobia fishery closed early in 2014 (December 11, 2014). The 2015 overages would have been deducted if the stock were overfished; however, given they are not overfished, the commercial quota for 2016 remains 50,000 pounds (Figure 4).

State-Specific Landings

Florida

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

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

Georgia

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

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

South Carolina

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

North Carolina

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

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

Virginia

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

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

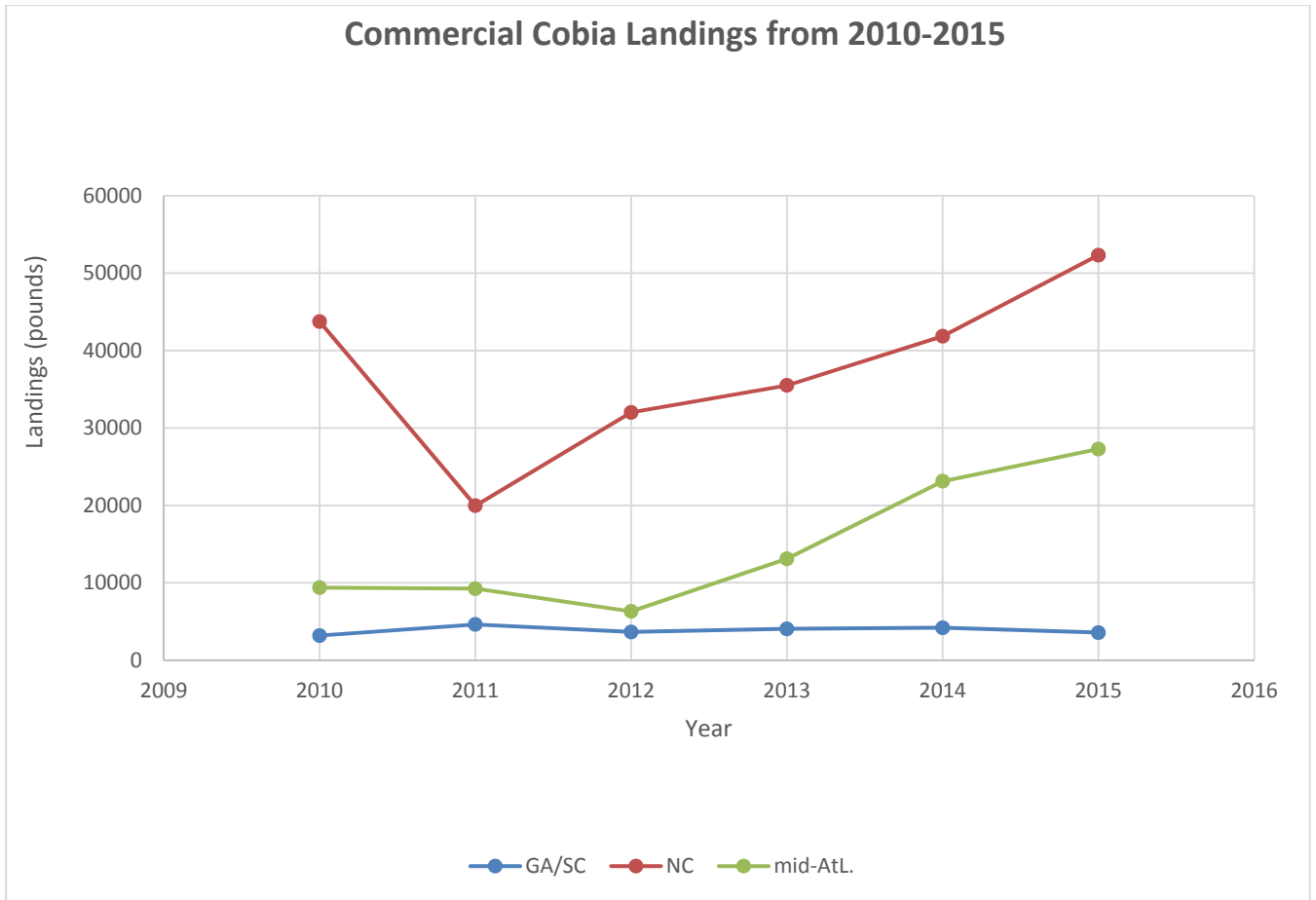


Figure 4. Commercial landings of Cobia (2010-2015)

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

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

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

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

| Year | GA/SC | NC | Mid-Atlantic* | Total |
|-----------------------------------------|----------|-----------|---------------|-----------|
| Commercial Landing in Pounds | | | | |
| 2010 | 3,174 | 43,737 | 9,364 | 56,275 |
| 2011 | 4,610 | 19,950 | 9,233 | 33,793 |
| 2012 | 3,642 | 32,008 | 6,309 | 41,959 |
| 2013 | 4,041 | 35,496 | 13,095 | 52,632 |
| 2014 | 4,180 | 41,848 | 23,111 | 69,139 |
| 2015 | 3,555 | 52,315 | 27,277 | 71,790 |
| Average | 3,867 | 37,559 | 14,732 | 56,158 |
| Dockside Revenues (2014 dollars) | | | | |
| 2010 | \$11,377 | \$70,377 | \$19,976 | \$101,730 |
| 2011 | \$19,666 | \$37,893 | \$21,666 | \$79,224 |
| 2012 | \$15,554 | \$66,887 | \$14,597 | \$97,038 |
| 2013 | \$15,639 | \$79,397 | \$35,792 | \$130,828 |
| 2014 | \$13,320 | \$95,462 | \$67,972 | \$176,754 |
| 2015 | \$11,151 | \$147,160 | \$75,360 | \$233,672 |
| Average | \$14,451 | \$82,863 | \$39,227 | \$136,541 |

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

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

Issues for Public Comment

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

ISSUE 1: COMPLEMENTARY MANAGEMENT WITH THE COUNCIL:

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

States have historically mirrored the Council’s size and bag limit regulations in state waters. The recreational closure in 2015 resulted in the states of Virginia and North Carolina modifying their regulations in order to reduce the impacts of the June 20, 2016 federal closure. The state of South Carolina has developed various, additional regulations based on area specific genetic

work and concern over the condition of a distinct population segment that occurs in their southern waters.

Management Questions:

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

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

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

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

Management Questions

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

ISSUE 3: CONSISTENT, STATEWIDE MANAGEMENT OF COBIA:

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

Management Questions:

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

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

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

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

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

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

Management Options:

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

ISSUE 6: OTHER ISSUES?

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

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Appendix II
State Fishery and Regulatory Summaries

I. GEORGIA

Regulatory Summary

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

Current Cobia Regulations in Georgia (March 2017)

Open year round, two fish per person per day, 33-inch fork length minimum size. (Board Rule 391-2-4-.04 (3)(h))

License Requirements

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

Penalties for Violations

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

Gear Restrictions

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

Commercial Landings and Data Reporting Requirements

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

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

Other Restrictions

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

Management Chronology

1957: Gill nets prohibited in state waters.

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

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

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

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

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

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

II. SOUTH CAROLINA

Description of the Fishery

1.3.1 Commercial Fishery:

There is a limited commercial fishery for cobia in South Carolina. Cobia are a state-designated Gamefish, and as such, cobia landed in state waters may not be sold commercially. However, cobia landed in Federal waters can be sold commercially under current regulations. Commercial cobia landings have ranged from 2000-4300 lbs a year with an annual mean of 3207 lbs a year for 2005-2016 and dollar values ranging from \$4,731-\$17,795 annually.

1.3.2 Recreational Fishery:

The recreational fishery for cobia in South Carolina accounts for the majority of cobia landings. The fishery occurs in both nearshore waters and around natural and artificial reefs offshore. Historically, the majority of cobia landings have occurred in state waters in and around spawning aggregations from April through May. However, due to intense fishing pressure in the inshore zone, annual landings of cobia have fallen drastically since 2009 such that the majority of recreationally caught cobia in South Carolina now come from offshore (federal) waters. Anglers begin targeting cobia in late April/early May with the peak of the season typically occurring May into early June. Late season catches can occur on nearshore reefs through October depending on water temps. However, these Fall catches of fish are sporadic. South Carolina has accounted for an average of 1.3% of total landings in state jurisdictional waters along the Atlantic coast for 2010-2016.

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

Cobia enter nearshore waters along the south Atlantic Coast when water temperatures reach 20-21 C, usually late April and aggregate to spawn through June. Histological evaluation of gonads from these nearshore collections suggest cobia are mature and spawning in inshore waters of high salinity estuaries (Callibogue, Port Royal Sound and St. Helena Sound in SC)(Lefebvre and Denson, 2012). The inshore spawning aggregations in South Carolina have been determined to be genetically distinct from the Atlantic stock of cobia (Darden et al. 2014). These findings are corroborated by conventional tag-recapture information and show estuarine fidelity for spawning fish and natal homing annually into estuaries. Eggs and larvae are typically found in nearshore waters where there is significant retention time of estuarine waters; however, juveniles (< 2yrs of age) are only occasionally caught inshore or in protected nearshore waters making it unclear what habitat the majority of this life stage utilizes until they mature and join spawning aggregations (Lefebvre and Denson, 2012).

2.1.1. History of Prior Management Actions

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

3. MONITORING PROGRAM SPECIFICATIONS/ELEMENTS

ASSESSMENT OF ANNUAL RECRUITMENT: None

ASSESSMENT OF SPAWNING STOCK BIOMASS: None

ASSESSMENT OF FISHING MORTALITY TARGET AND MEASUREMENT: None

SUMMARY OF MONITORING PROGRAMS

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

Biological Information:

Observer Programs: None in South Carolina

STOCKING PROGRAM: South Carolina has an experimental stock enhancement program designed to evaluate the methodology necessary for augmenting wild populations. To date experiments have been designed to determine best size and time of year to stock cobia in coastal rivers focused on augmentation of the distinct population segment of cobia in SC. Locally-caught brood stock have been conditioned to spawn in recirculating seawater systems using temperature and photoperiod conditioning and hormone implantations to facilitate final oocyte maturation. To date multiple years of spawning and growout has occurred, and more than 50,000 (60-350 mm TL) cobia have been stocked in the Colleton and Broad Rivers of Port Royal Sound. All fish are genetically identifiable to broodstock group and can be identified in the catch and distinguished genetically from wild-spawned fish. Cobia tissue samples collected from charterboat captains and from carcasses collected at tournaments and cooperating recreational anglers show that as much as 50% of the catch from the 2007 yearclass were from hatchery releases and that these animals have persisted in the catch each year since release. This research has demonstrated the application of stock enhancement as an additional management tool for cobia. In addition to research on production of animals, the SCDNR has developed predictive individual-based genetic models to determine the appropriate number of cobia that should be produced and stocked each year in order to grow the population while minimizing any negative impact on the genetic health of the wild population.

BYCATCH REDUCTION PROGRAM: None in South Carolina

6. MANAGEMENT AND RESEARCH NEEDS

Biological, Social, Economic and Habitat

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

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

Regulatory Summary

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

Current Cobia Regulations in South Carolina (July 2017)

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

License Requirements

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

Penalties for Violations

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

Gear Restrictions

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

Commercial Landings and Data Reporting Requirements

South Carolina requires commercial harvesters (South Carolina Code of Laws: Section 50-5) and seafood dealers (South Carolina Code of Laws: Section 50-5) to submit landings data.

Information to be supplied for each trip includes trip date; vessel identification; trip number; species; quantity; units of measure; disposition; value; county or port landed; state landed; dealer identification; unloading date; market; grade; gear; quantity of gear; days at sea; number of crew; fishing time; and number of sets.

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

Management Chronology

Prior to 1985: No Regulation

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

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

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

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

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

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

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

2016:

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

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

III. NORTH CAROLINA

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

Historically, recreational fisherman targeted cobia from a vessel by anchoring and fishing either dead, or live bait or both near inlets and deep water sloughs inshore (Manooch 1984). Fish were also harvested from shore or off of piers using dead or live bait, most commonly menhaden. In the early 2000s, fisherman began outfitting their vessels with towers to gain a higher vantage point to spot and target free swimming cobia along tidelines and around bait aggregations. This method of fishing actively targets cobia in the nearshore coastal zone and has become the primary mode of fishing in most parts of the state.

Recreational harvest of cobia in North Carolina from 1981 – 2016 have ranged from a low of 0 pounds (1983) to a high of 695,842 pounds (2015) with average landings of 165,146 over the 36-year time series (Figure NC1; Table NC1). Landings during the 1980s and 1990s remained relatively constant from year to year. Landings began to increase and become more variable beginning in the mid-2000s. From 2005-2015, recreational cobia landings in North Carolina ranged from 66,258 to 630,373 pounds (avg. = 259,883 pounds). Seasonally, cobia are landed mostly in the spring and summer months corresponding with their spring spawning migration (Smith 1995). Peak landings occur during the latter part of May into June and quickly diminish thereafter. However, recreational landings of cobia can occur through the month of October. By fishing mode, the majority of recreational landings of cobia in North Carolina occur from private vessels (73 %) with charter vessels (14 %) and shore based modes (13 %) accounting for the rest (Table NC2).

Commercial landings of cobia in North Carolina are available from 1950 to the present. However, monthly landings are not available until 1974. North Carolina instituted mandatory reporting of commercial landings through their Trip Ticket Program, starting in 1994. Landings information collected since 1994 are considered the most reliable. The primary fisheries associated with cobia in North Carolina are the snapper-grouper, coastal pelagic troll, and the large mesh estuarine gill net fisheries. Cobia landings from 1950 – 2016 have ranged from a low of 600 pounds (1951; 1955) to a high of 52,684 pounds (2015) with average landings of 16,611 pounds over the 66-year time series (Table NC3). Recently, landings have ranged from 19,004 pounds (2007) to 52,6845 pounds (2015), averaging 34,674 pounds over the last ten years (Figure NC2).

The primary commercial gear used to harvest cobia has changed overtime. This is most likely due to changing fisheries and the fact that it is mostly considered a marketable bycatch fishery,

especially after North Carolina adopted the CMP FMP measures of 33-inches minimum fork length and two-per person possession limit in 1991. From 1950 to the late 1970s, cobia were mostly landed out of the haul seine fishery. Most landings that occurred during the 1980s came from the pelagic troll and handline fishery with modest landings from the haul seine and anchored gill net fishery. From 1994 – 2016, the majority of landings have occurred from the anchored gill net and pelagic troll and handline fishery with gill nets being the top gear during most of those years.

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- Manooch, Charles S. 1984. Fisherman's guide to fishes of the Southeastern United States. North Carolina Museum of Natural History. Raleigh, North Carolina. 362 pp.
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Tables and Figures**Table NC1.** Recreational estimates of cobia harvest from North Carolina from 1981 – 2016.

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

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

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

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

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

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

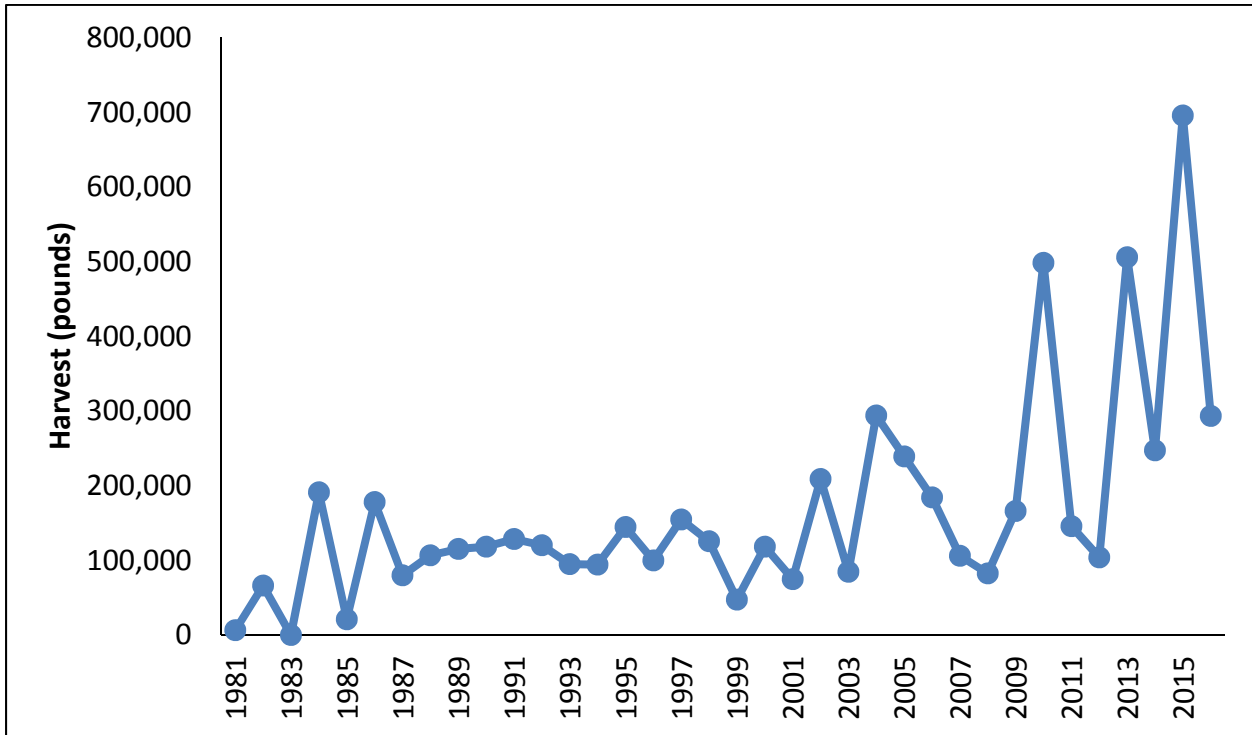
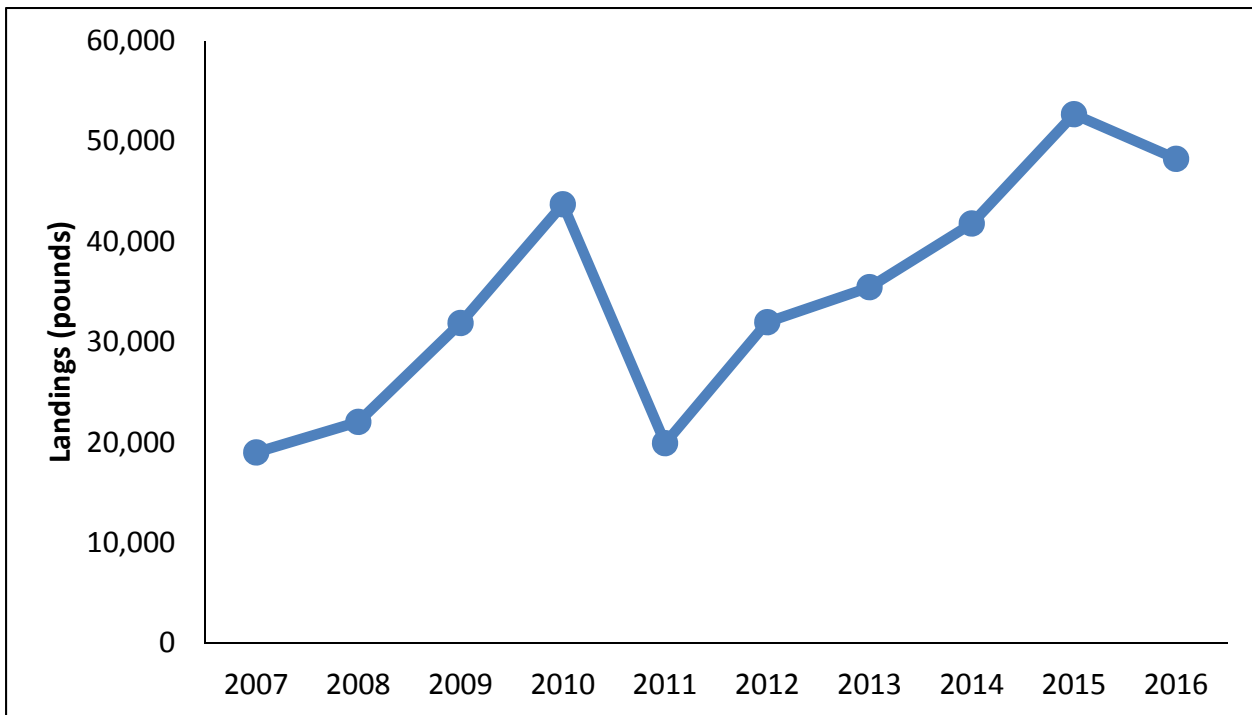


Figure NC2. Total commercial landings of cobia from North Carolina from 2007 – 2016.



IV. VIRGINIA

Description of the Fishery

1.3.1 Commercial Fishery

Virginia has had variable commercial landings of cobia since the Virginia Marine Resources Commission instituted mandatory reporting in 1993, with landings being high in the mid-1990s, lower in the mid-2000s, and peaking in the past three years (2014-2016; Table VA1). There is a small, but directed hook-and-line fishery, with mainly bycatch landings from gillnets and pound nets, although these landings can be sizable (Table VA2). The “Other” category is predominantly gillnet landings, but they were combined with other gears for confidentiality purposes. Hook-and-line landings have been the largest, by gear, since 2007.

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

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

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

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

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

1.3.2 Recreational Fishery

According to the Marine Recreational Fisheries Statistics Survey (MRFSS) and Marine Recreational Information Program (MRIP), Virginia’s estimated recreational landings of cobia have been highly variable since 2000, with the lowest estimate being 26,537 pounds in 2012 and 898,542 pounds in 2006 (Table 3). Although still preliminary, the estimate for 2016 is 919,992 pounds. It is believed the recreational fishery has grown in recent years, both in the number of participants, and the effectiveness of fishing due to the advent of sight-casting—especially when aided by “cobia towers.” Traditionally, cobia had been targeted using live-bait bottom-fishing, but these new techniques are causing a shift in preference among anglers. However, the extent of this change is not clear for Virginia’s recreational fishery.

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

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

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

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

1.3.4 Non-Consumptive Factors

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

1.3.5 Interactions with Other Fisheries, Species, or Users

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

1.5 Impacts of the Fishery Management Program

1.5.1 Biological and Environmental Impacts

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

1.5.2 Social Impacts

1.5.2.1 Recreational Fishery

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

1.5.2.2 Commercial Fishery

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

1.5.2.4 Non-consumptive Factors

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

1.5.3 Economic Impacts

1.5.3.1 Recreational Fishery

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

1.5.3.2 Commercial Fishery

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

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

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

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

1.5.3.4 Non-Consumptive Factors

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

1.5.4 Other Resource Management Efforts

1.5.4.2 Bycatch

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

3.0 MONITORING PROGRAM SPECIFICATIONS/ELEMENTS

3.4 Summary of Monitoring Programs

3.4.1 Catch and Landings Information

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

3.4.2 Biological Information

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

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

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

3.4.3 Social Information

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

3.4.4 Economic Information

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

3.4.5 Observer Programs

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

3.5 Stocking Program (if appropriate)

The Virginia Institute of Marine Science (VIMS) began an experimental stocking program in the Chesapeake Bay in 2003 to explore stock enhancement and study juvenile movement and habitat utilization (VIMS 2017). Juvenile cobia were tagged and released into the Chesapeake Bay in 2003, 2006, 2007, and 2008, with more than 300 coming in those first two years. Recapture information indicated habitats ranging 1-4 m in depth and consisting of sandy and grass-bed bottoms. It is unclear whether this program had any effect on the population of cobia in Virginia, although it is assumed it did not due to the small number of releases.

3.6 Bycatch Reduction Program

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

3.7 Habitat Program

There is no habitat program for cobia in Virginia.

References

- Cobia Tagging. 2017. Virginia Institute of Marine Science.
http://www.vims.edu/research/departments/fisheries/programs/tagging_research/cobia/index.php
- Lovell, SJ, J Hilger, S Steinback, and C Hutt. 2016. The Economic Contribution of Marine Angler Expenditures on Durable Goods in the United States, 2014. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-165, 72 pp.
- Musick, S, and L Gillingham. 2016. Virginia Game Fish Tagging Program Annual Report, 2015. Virginia Institute of Marine Science Marine Resources Report No. 2016-05. 102 pp.

Appendix III

Cobia Management Options from the Working Group

for South Atlantic Board Review

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

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

Background:

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

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

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

Summary of the Fishery:

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

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

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

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

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

| Year | GA/SC | NC | Mid-Atlantic* | Total |
|-----------------------------------------|----------|-----------|---------------|-----------|
| Commercial Landing in Pounds | | | | |
| 2010 | 3,174 | 43,737 | 9,364 | 56,275 |
| 2011 | 4,610 | 19,950 | 9,233 | 33,793 |
| 2012 | 3,642 | 32,008 | 6,309 | 41,959 |
| 2013 | 4,041 | 35,496 | 13,095 | 52,632 |
| 2014 | 4,180 | 41,848 | 23,111 | 69,139 |
| 2015 | 3,555 | 52,315 | 27,277 | 71,790 |
| Average | 3,867 | 37,559 | 14,732 | 56,158 |
| Dockside Revenues (2014 dollars) | | | | |
| 2010 | \$11,377 | \$70,377 | \$19,976 | \$101,730 |
| 2011 | \$19,666 | \$37,893 | \$21,666 | \$79,224 |
| 2012 | \$15,554 | \$66,887 | \$14,597 | \$97,038 |
| 2013 | \$15,639 | \$79,397 | \$35,792 | \$130,828 |
| 2014 | \$13,320 | \$95,462 | \$67,972 | \$176,754 |
| 2015 | \$11,151 | \$147,160 | \$75,360 | \$233,672 |
| Average | \$14,451 | \$82,863 | \$39,227 | \$136,541 |

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

BOARD DISCUSSION ISSUES:

Size and Bag Limits:

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

State by State Allocations:

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

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

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

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

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

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

DRAFT DOCUMENT FOR BOARD DISCUSSION; NOT FOR PUBLIC COMMENT

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

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

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

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

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

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

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

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

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

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

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

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

2005 – Delaware – 1,480 lbs.

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

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

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

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

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

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

Board Decisions:

Time series options (years used and number of years)

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

Seasonal Options:

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

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

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

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

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

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

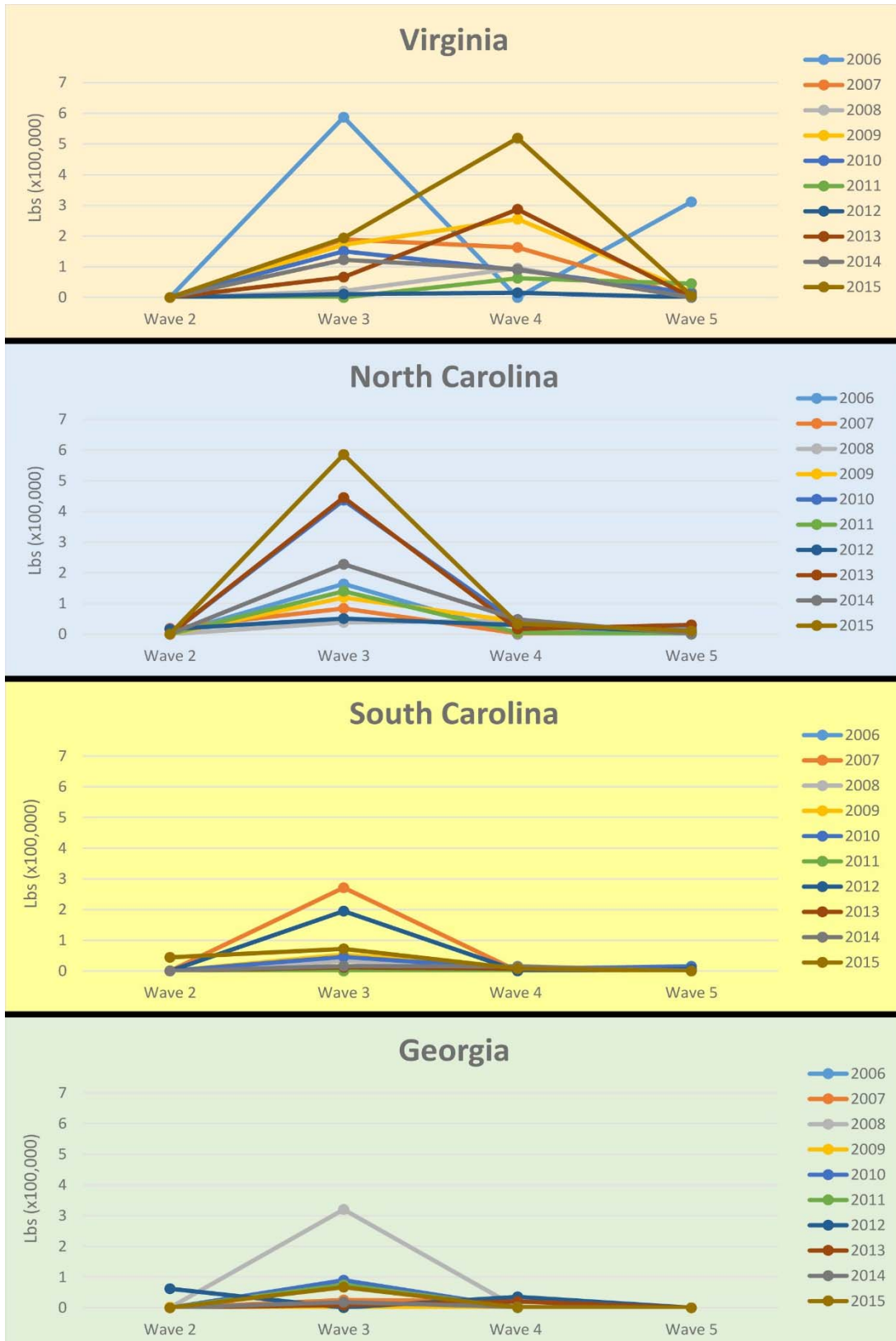


Figure 1. Recreational catch of Atlantic cobia by wave from 2006-2015 for Waves 2-5. Data sources: SERO and MRIP database—Framework 4.

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

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

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

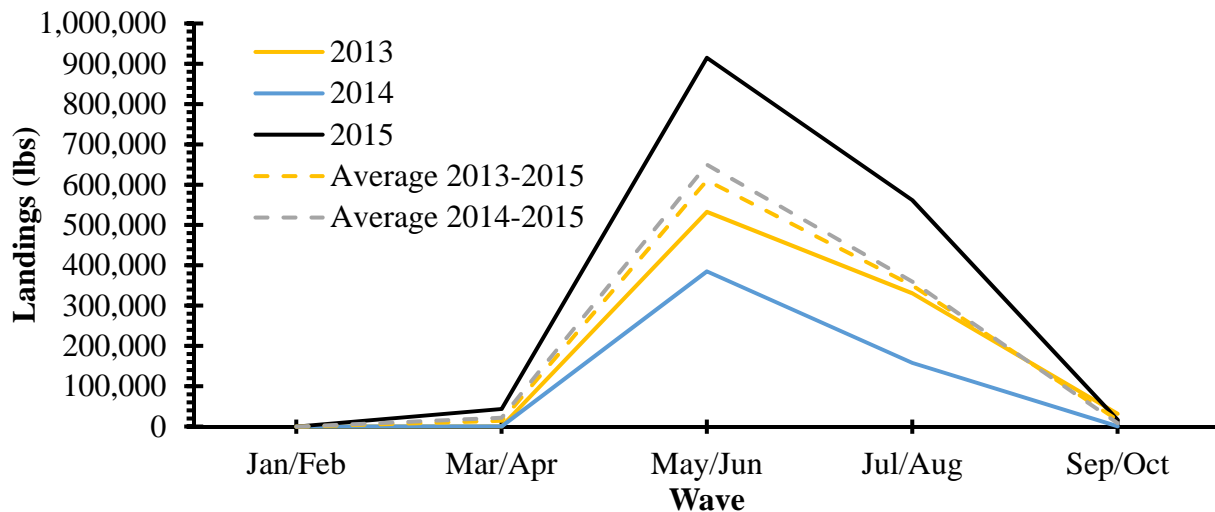


Figure 2. Framework Figure 2.2.1. Atlantic recreational landings for January-October of 2013, 2014, 2015, average 2013-2015 landings, and average 2014-2015 landings by two-month wave. The landings for 2015 are preliminary. Source: SEFSC Recreational ACL Dataset

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

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

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

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

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

Board Decisions/Discussion:

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

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

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

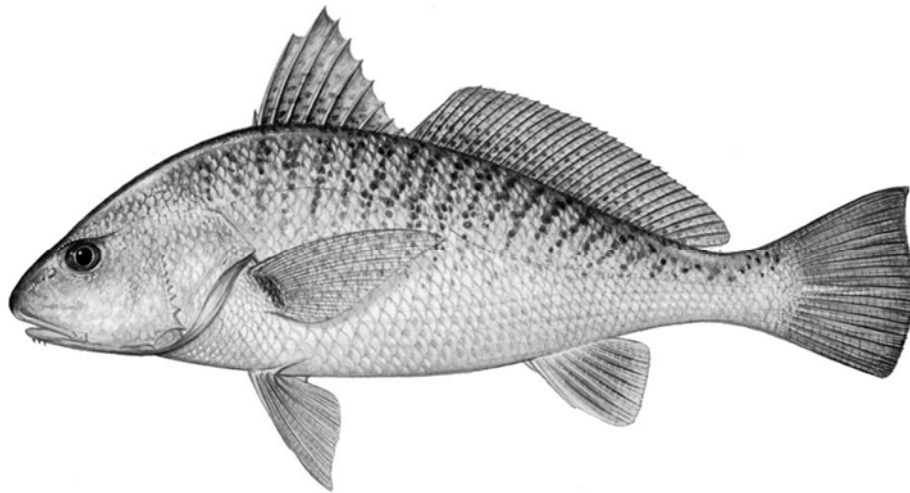
Should the plan attempt to develop alternative quota monitoring methods that use a multiple of years to provide states to adjust after year 1 or an overage if landings are too high or too low based on initial measures? These efforts would have to be developed with NMFS and the Council.

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

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

**Traffic Light Analysis of Atlantic Croaker (*Micropogonias undulatus*) for the
Atlantic States Marine Fisheries Commission Fishery Management Plan
Review.**

Update for 2015-2016 Fishing Years



Atlantic Croaker Plan Review Team

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Introduction

Atlantic croaker are managed under Amendment 1 to the Interstate Fishery Management Plan for Atlantic Croaker (2005) and Addendum I (2011). The Amendment does not require any specific measures restricting harvest but encourages states with conservative measures to maintain them. It also implemented a set of management triggers, based on an annual review of certain metrics, to respond to changes in the fishery or resource and initiate a formal stock assessment on an accelerated timeline if necessary. The Addendum revises the management program's biological reference points to assess stock condition on a coastwide basis as recommended by the 2010 stock assessment.

In August 2014, the South Atlantic State/Federal Fisheries Management Board approved Addendum II to Amendment I to the Atlantic Croaker Fishery Management Plan (FMP). The Addendum establishes a new management framework (i.e., Traffic Light Approach or TLA) to evaluate fisheries trends and develop state-specified management actions (i.e., bag limits, size restrictions, time & area closures, and gear restrictions) when harvest and abundance thresholds are exceeded. The TLA is a statistically-robust way to incorporate multiple data sources (both fishery-independent and -dependent) into a single, easily understood metric for management advice. It is often used for data-poor species, or species which are not assessed on a frequent basis, such as blue crabs in North Carolina and snow crabs in the Gulf of St. Lawrence. As such, it serves as an excellent management tool for Atlantic croaker, until the currently underway stock assessment is completed.

The name comes from assigning a color (red, yellow, or green) to categorize relative levels of indicators on the condition of the fish population (abundance metric) or fishery (harvest metric). For example, as harvest or abundance increase relative to their long-term mean, the proportion of green in a given year will increase and as harvest or abundance decrease, the amount of red in that year becomes more predominant. Under the Addendum II, state-specific management action would be initiated when the proportion of red exceeds specified thresholds (30% or 60%), for both harvest and abundance, over three consecutive years.

The current management triggers for Atlantic croaker compare annual changes in various indices (e.g. recent landings and survey information) to review trends in the fisheries. The Atlantic Croaker Technical Committee expressed concern that previous review methodology did not illustrate long-term trends in the stock nor did it include specific management measures to implement in response to declines in the stock or fishery. This resulted in the change to the TLA for annual review of Atlantic croaker. A new stock assessment for Atlantic croaker was begun in 2015 and the current management triggers from the TLA will be re-evaluated and adjusted as needed once the stock assessment has been completed.

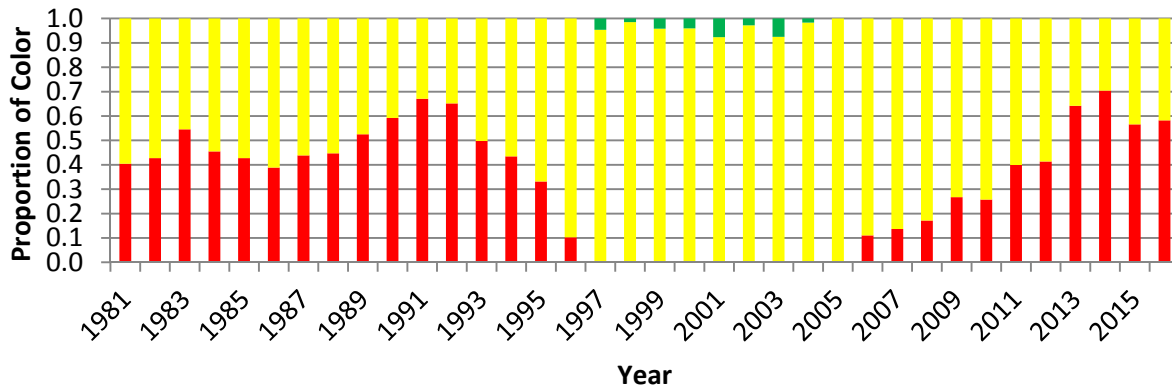
The indices used for the TLA include both commercial and recreational harvest (fishery dependent) and four fishery independent monitoring surveys that occur in different areas of the Atlantic coast of the United States. The fishery independent surveys include the Northeast Fisheries Science Center (NMFS) fall ground fish trawl survey, the Virginia Institute of Marine Science (VIMS) trawl survey, the North Carolina Dept. of Marine Fisheries trawl program 195, and the Southeast Area Monitoring Assessment Program (SEAMAP) trawl survey.

Traffic Light Analysis (Fishery Dependent)

Commercial Landings

- Commercial landings were up 156% in 2015 (3,120 metric tons) from 2014 (1,220 metric tons) and declined slightly (7.3%) in 2016 to 2,894 metric tons.
- The TLA for commercial landings has been above the 30% every year since 2011 (Fig. 1) and was the fifth year in a row where landings were above the 30%.
- More concerning is that the red proportion has been above the 60% red threshold for the last four years (2013-2016).
- The three year red proportion average was greater than 60% in 2015, and 2016 which indicates possible elevated management concern due to the decline in commercial landings.

Figure 1. Annual TLA color proportions for Atlantic croaker commercial landings for the Atlantic coast of the US.

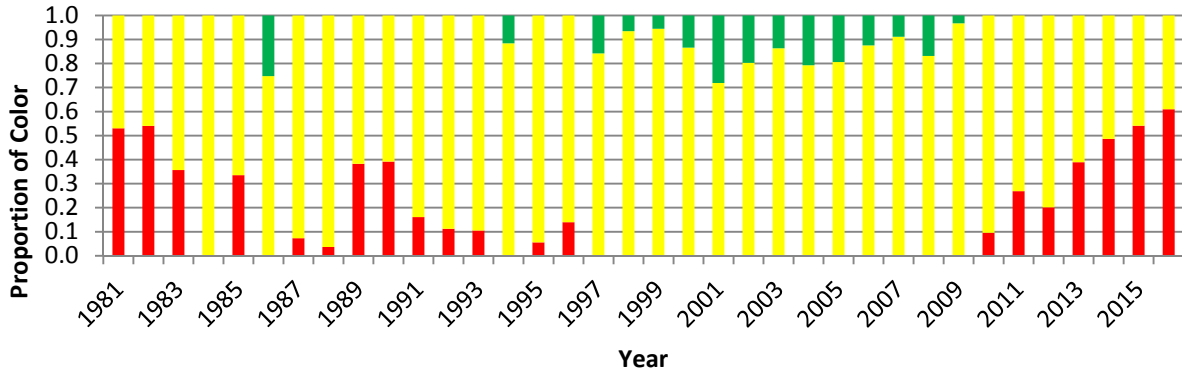


Recreational Harvest

- The recreational harvest index also continued to decline, down 16.4% in 2015 and 24.6% in 2016 from harvest levels seen in 2014.
- The recreational harvest level in 2015 (2,584,350 lbs) was among the lowest annual harvests in the entire time series (1981-2014) and 2016 (1,949,944 lbs) was the lowest year in the entire data series.
- Annual percent standard error (PSE) levels were elevated ($> 20\%$) but not quite at the level where considered completely unreliable ($> 50\%$).
- The 3 year average proportion of red in the TLA was 47.2% in 2015 and 54.6% in 2016 (Fig. 2), indicating the recreational index would have triggered the last three years at the 30% level.

- The decline in harvest levels for Atlantic croaker in the recreational fishery may be cause for concern.

Figure 2. Annual TLA color proportions for Atlantic croaker from Atlantic coast (NJ-FL) recreational harvest of the U.S. based on a 1996-2008 reference period.

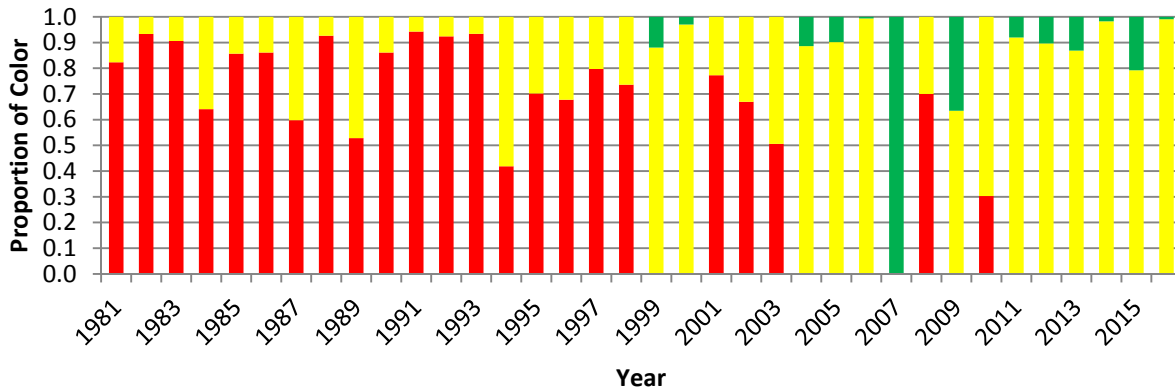


Traffic Light Analysis (Fishery Independent Surveys)

NEFSC/NMFS Fall Groundfish Survey

- The NMFS index increased 49.7% in 2015 and declined 34.6% in 2016 with no red in the TLA since 2010 (Fig. 3).
- The index has stayed above the long term mean since 2011.
- The TLA trigger would not have tripped on the NMFS index in either 2015 or 2016 given catch levels at or above the long term mean in the previous three years.

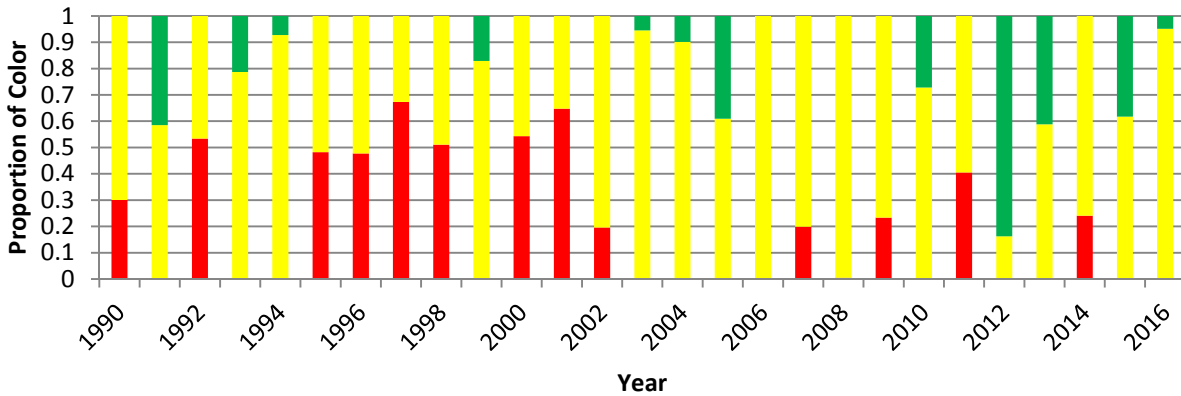
Figure 5. Annual TLA color proportions for Atlantic croaker from NMFS groundfish trawl survey based on 1996-2008 reference period.



SEAMAP Survey

- The SEAMAP index increased 174% in 2015 and then declined 40.8% in 2016.
- Index values remained above the long term mean for both years, so there was no red in the TLA (Fig. 4).
- The TLA trigger for the SEAMAP survey did not trip in either 2015 or 2016.

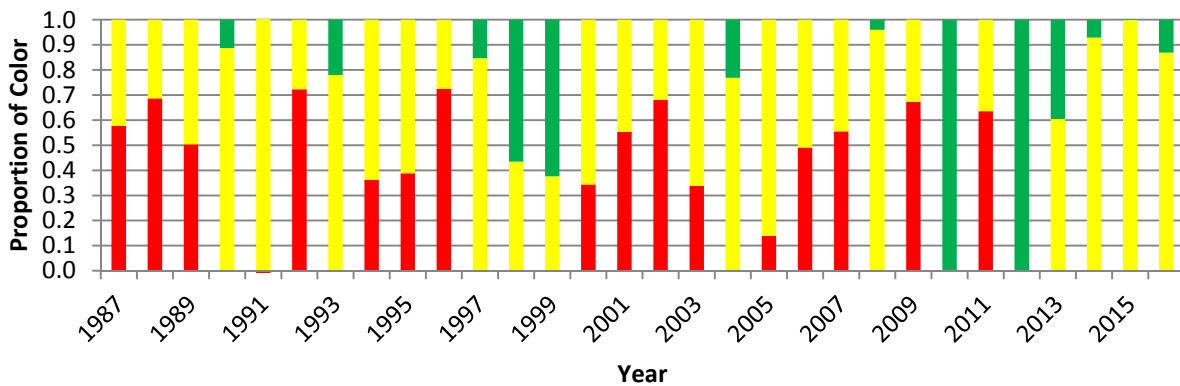
Figure 4. Traffic Light Model for SEAMAP catch data by weight using a 1996-2008 reference period.



North Carolina Program 195

- The North Carolina index declined in 2015 (down 16.5% from 2014) and increased in 2016 (36.7%) from 2015, but did not drop below the long term mean for the data series in either year.
- While the TLA indicates declining index values since the peak in 2012 (decreasing green proportions, Figure 5), general catch levels in the index remained above the long term mean for the series and did not trigger in 2015 or 2016.

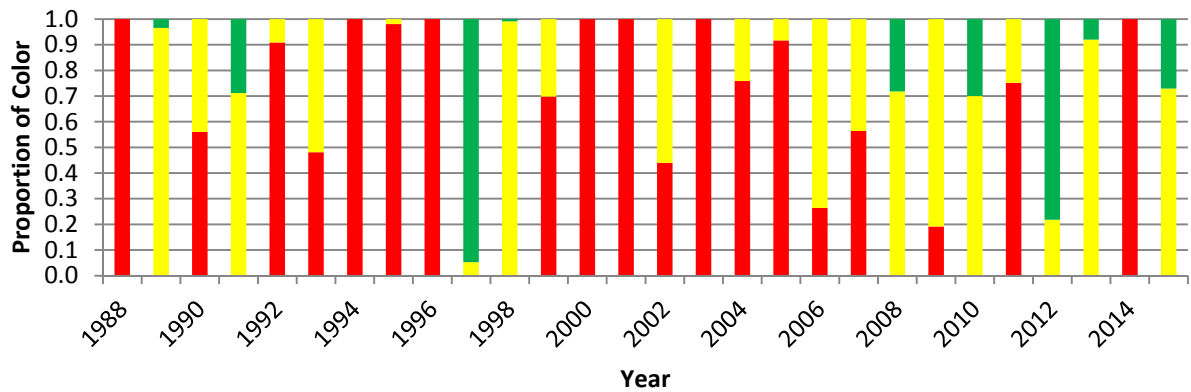
Figure 5. NCDMF Program 195 TLA color proportions for Atlantic croaker using 1996-2008 reference period.



VIMS Survey

- The VIMS index increased significantly (1668%) in 2015 from 2014 going from 1.55 fish per tow in 2014 to 27.4 fish per tow in 2015. The alternating high variability in annual index values was evident in the alternating proportions of red and green in the TLA (Fig. 6).
- The index value was above the long term mean in 2015 and the three year average red proportion was below 30% so the index would not have tripped the TLA trigger.

Figure 6. Annual TLA color proportions for Atlantic croaker from VIMS spring trawl survey.

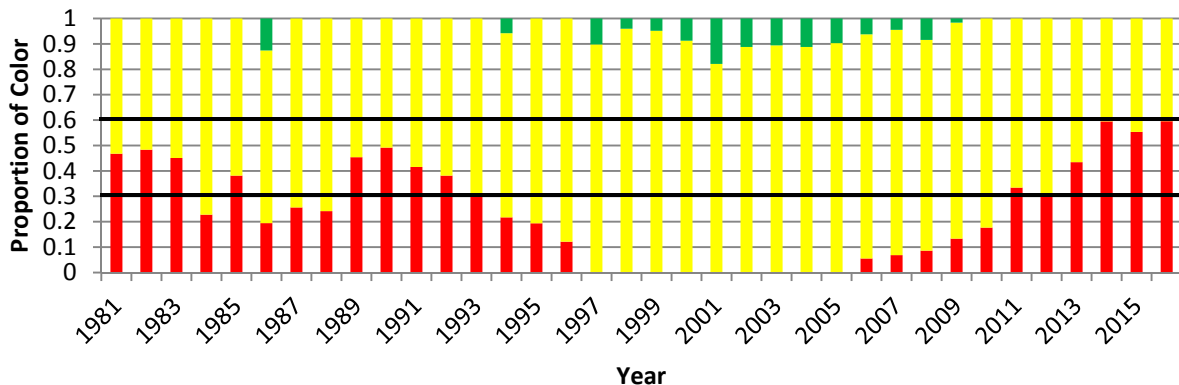


Traffic Light Analysis (Composite Indexes)

Harvest Composite Index

- The harvest composite TLA index indicates that the management response trigger would have been tripped for the fourth year in a row.
- The mean red proportion for the most recent three year time period (2014-2016) was 58.1% which was well above the 30% moderate concern threshold.
- The important trend to point out is the continuing decline in recreational and commercial landings for Atlantic croaker.

Figure 7. Annual color proportions for harvest composite TLA of Atlantic Croaker recreational and commercial landings



Abundance Composite Characteristic Indexes

The abundance composite TLA index was broken into two components based age composition. The adult composite index was generated from the NMFS and SEAMAP surveys since the majority of Atlantic croaker captured in those surveys were ages 1+. The juvenile composite index was generated from the NC program 195 and VIMS surveys because these two captured primarily young-of-the-year Atlantic croaker.

- All four abundance indexes showed increases in both 2015 and 2016 with no red proportion occurring in either year.
- The adult composite TLA characteristic (Fig. 8) showed a higher proportion of green in 2015 (29.5%) than in 2016 (2.9%).
- The juvenile composite TLA characteristic (Fig. 9) had no red in the index for either 2015 or 2016 indicating an increase in abundance over 2014. The NC 195 index had a lower proportion of green compared to the VIMS index.
- The juvenile composite characteristic index did not trip in either 2015 or 2016.

- The higher annual variability for the different color proportions in the juvenile composite characteristic (compared to the adult composite characteristic) is likely a reflection annual recruitment variability rather than population trends.
- It is also worthwhile to point out that the trends in the two abundance composite characteristics reflect each other closely for the last three years with similar trends in color proportions.

Figure 8. Adult croaker TLA composite characteristic index (NMFS and SEAMAP surveys).

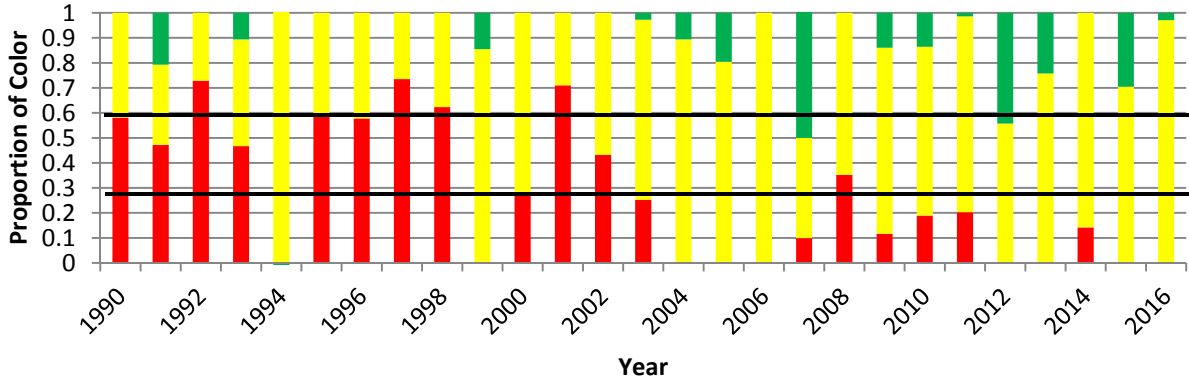
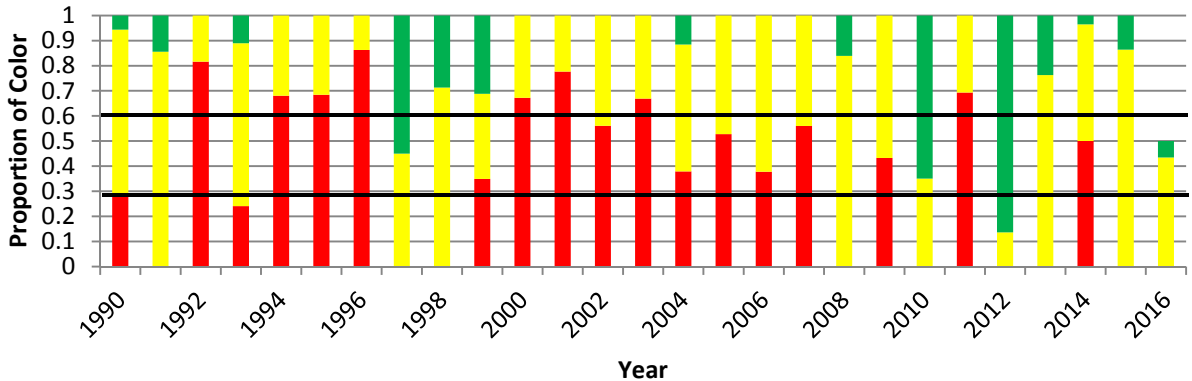


Figure 9. Juvenile croaker TLA composite characteristic index (NC 195 and VIMS surveys).



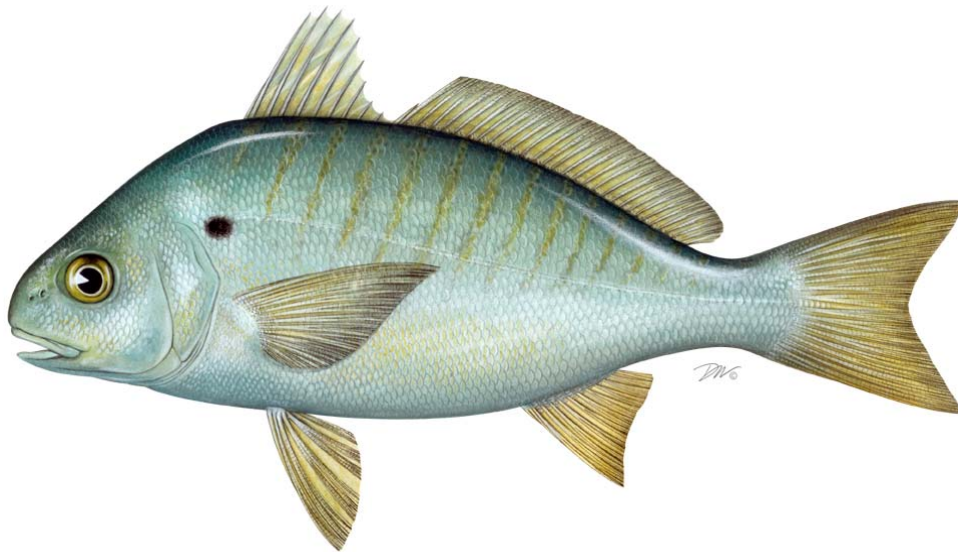
Summary

The harvest composite TLA did trip in both 2015 and 2016 while the abundance TLA composite showed the opposite trend with increasing abundance and not having the management concern threshold tripped. The continued declining trend in the commercial and recreational harvests for the Atlantic coast is of concern. The recently completed Atlantic croaker stock assessment (ASMFC, 2017) showed that overfishing was not occurring and that Atlantic croaker were not overfished with biomass levels (SSB) at relatively high levels and fishing mortality (F) being relatively low. This contrasts the decline seen in the harvest TLA for both recreational and

commercial landings, while the increasing trends seen in the abundance indices more closely resemble the results of the stock assessment. The explanation for this discrepancy may lie in differing size and age structures of the different fishery independent surveys and commercial and recreational landings, with older/larger fish being the more likely target of the fishery. An age partitioning approach of the different indices may allow better refinement of the TLA providing more synchrony between the harvest and landings metrics for adults as well as juveniles. This approach should be examined by the TC for future consideration.

2017 Traffic Light Analysis of Spot (*Leiostomus xanthurus*) for the Atlantic States Marine Fisheries Commission Fishery Management Plan Review

2016 Fishing Year



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*Prepared analysis and report

Introduction

Spot is managed under the Omnibus Amendment for Spot, Spotted Seatrout, and Spanish Mackerel (2011) and Addendum I (2014). The Omnibus Amendment updates all three species plans with requirements of the Commission's ISFMP Charter. No coastwide assessment has been performed for spot; however, spot are a target or component of several state surveys using trawls, gillnets, or seine nets. Abundance indices have been highly variable throughout the survey time series. The Commission has begun preparations for the development of the first coastwide benchmark stock assessment in 2015 for final presentation to the South Atlantic Management Board in 2017.

In the absence of a coastwide stock assessment, the South Atlantic Board approved Addendum I to the Spot FMP in 2014. The Addendum establishes use of a Traffic Light Analysis (TLA), similar to that used for Atlantic croaker, to evaluate fisheries trends and develop state-specified management actions (e.g., bag limits, size restrictions, time and area closures, and gear restrictions) when harvest and abundance thresholds are exceeded for two consecutive years. The TLA is a statistically-robust way to incorporate multiple data sources (both fishery-independent and -dependent) into a single, easily understood metric for management advice. It is often used for data-poor species, or species which are not assessed on a frequent basis. The name comes from assigning a color (red, yellow, or green) to categorize relative levels of indicators on the condition of the fish population (abundance metric) or fishery (harvest metric). For example, as harvest or abundance increase relative to their long-term mean, the proportion of green in a given year will increase and as harvest or abundance decrease, the amount of red in that year becomes more predominant. The TLA improves the management approach as it illustrates long-term trends in the stock and includes specific management recommendations in response to declines in the stock or fishery. Under the Addendum, state-specific management action would be initiated when the proportion of red exceeds specified thresholds (30% or 60%), for both harvest and abundance, over two consecutive years.

The current management triggers for spot compare annual changes in various indices (e.g. recent landings and survey information) to review trends in the fisheries. The spot Plan Review Team expressed concern that previous review methodology did not illustrate long-term trends in the stock nor did it include specific management measures to implement in response to declines in the stock or fishery. This resulted in the change to the TLA for annual review of spot. A new stock assessment for spot was begun in 2015 and the current management triggers from the TLA will be re-evaluated and adjusted as needed once the stock assessment has been completed.

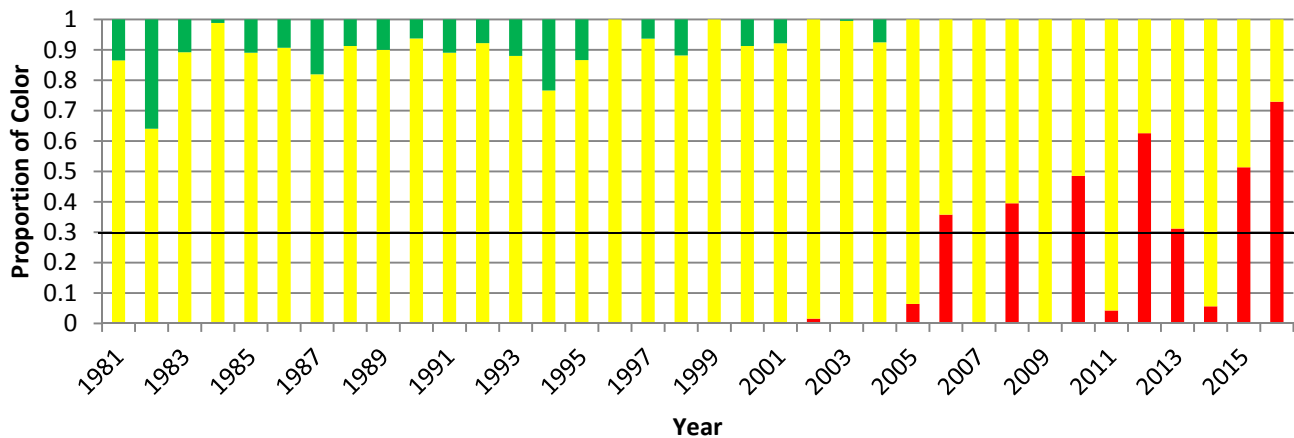
The indices used for the TLA include both commercial and recreational harvest (fishery dependent) and three fishery independent monitoring surveys that occur in different areas of the Atlantic coast of the United States. The fishery independent surveys include the Northeast Fisheries Science Center (NMFS) fall ground fish trawl survey, the Maryland Dept. of Natural Resources juvenile striped bass seine survey, and the Southeast Area Monitoring Assessment Program (SEAMAP) trawl survey.

Traffic Light Analysis (Fishery Dependent)

Commercial

- Commercial landings for spot on the Atlantic coast declined 70% in 2016 from 2015, continuing a declining trend in commercial landings that has been occurring since 2003. Total annual landings have declined 90.7% from 2004 to 2016.
- The TLA for commercial landings had relatively stable proportions of green and yellow throughout the 1980s and 1990s but began declining in the early 2000s as evidenced by increasing proportions of red (Fig. 1). The long term mean for the reference time series (1989-2012) was 5,744,635 lbs per year but the average landings since 2010 have dropped to 2,886,785lbs with a value of 627,220 lbs in 2016.
- The landings in 2016 represent the lowest annual landings for spot in the entire commercial data time series (1950-2016) and are only 10.9% of the long term mean landings.
- The TLA commercial index did trip at the 30% level in 2016 and has done so in 5 of the last 7 years, with the 2 year average proportion exceeding 30%.

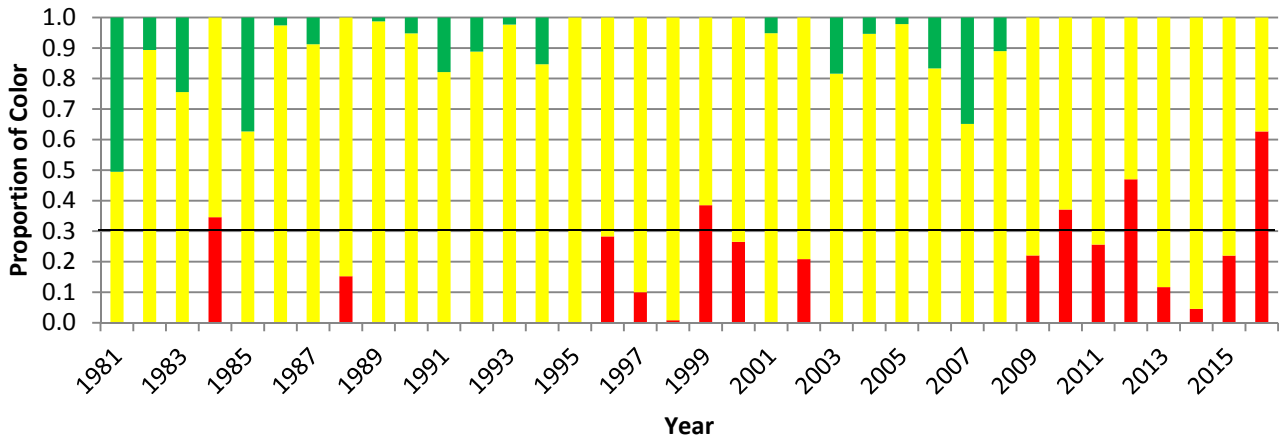
Figure 1. Annual FTLA color proportions using 1981-2012 reference time period for Spot from NMFS commercial landings for the Atlantic coast of the U.S.



Recreational

- The recreational harvest (in lbs) for spot on the Atlantic coast declined 66.9% in 2016 from 2015, down to 751,332 lbs in 2016 from 2,270,859 lbs in 2015.
- Annual harvest in the recreational fishery has been below the long term mean (LTM) since 2009 and was still below that threshold in 2016.
- The red proportion of the TLA increased in 2016 to 62.6%, well above the 30% trigger level. The recreational TLA did not trip in 2016 as it did not exceed the 2 year (2015-2016) average proportion of 30% or greater.

Figure 2. Annual TLA color proportions using 1989-2012 reference period for spot from recreational harvest in LBS on the Atlantic coast of the U.S.

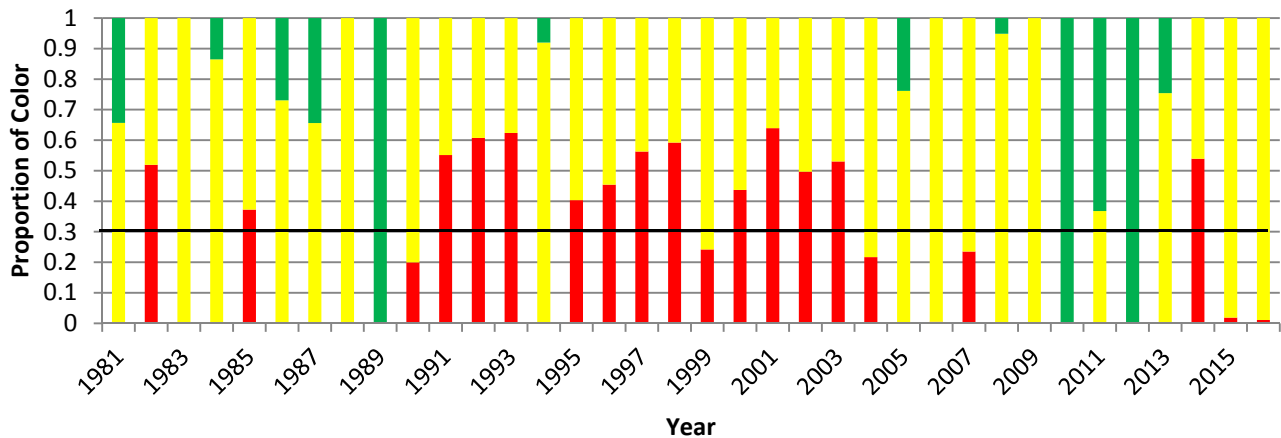


Traffic Light Analysis (Fishery Independent)

NEFSC/NMFS Fall Groundfish Trawl Survey

- The NMFS index had only a slight increase (1.3%) in 2016 from 2015, however it was still below the long term mean (green/yellow boundary for the TLA).
- The longest time period with high red proportions in the TLA occurred from 1990-2003 (Fig. 3), after which catch steadily increased until the peak in 2012. Higher proportions of green in the index did not occur until 2010-2012 when the catch was well above the LTM.
- The TLA did not trigger in 2016 with the 2 year average red proportion below the 30% threshold.

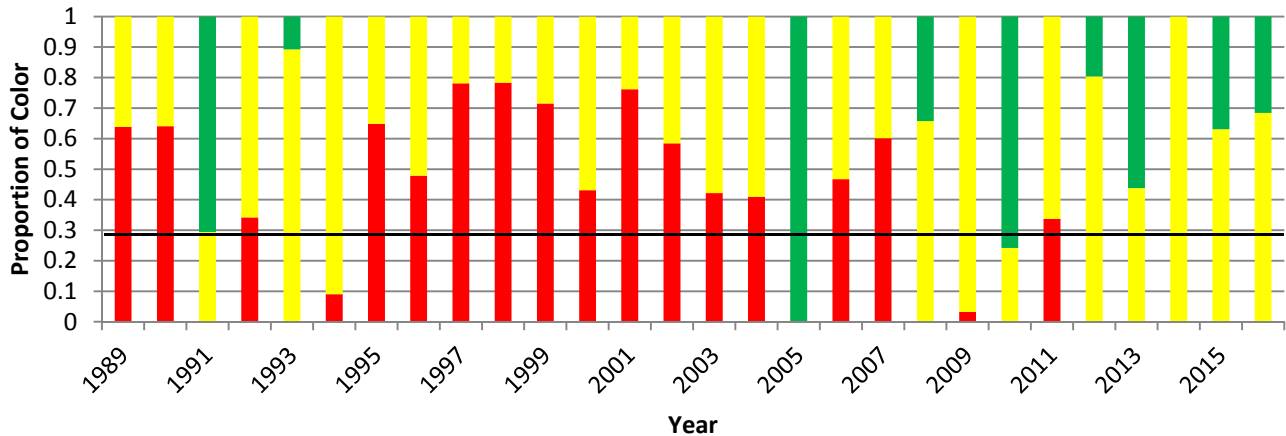
Figure 3. Annual TLA color proportions for Fuzzy Traffic Light model using 1989-2012 reference time period for Spot from NMFS fall groundfish trawl survey.



SEAMAP Trawl Survey

- The annual CPUE declined 6.9% in 2016 from 2015 and remained above the long term mean (11.3 kg fish per tow).
- The TLA index did not trigger 2016, and under the current TLA trigger scheme hasn't triggered since 2007.

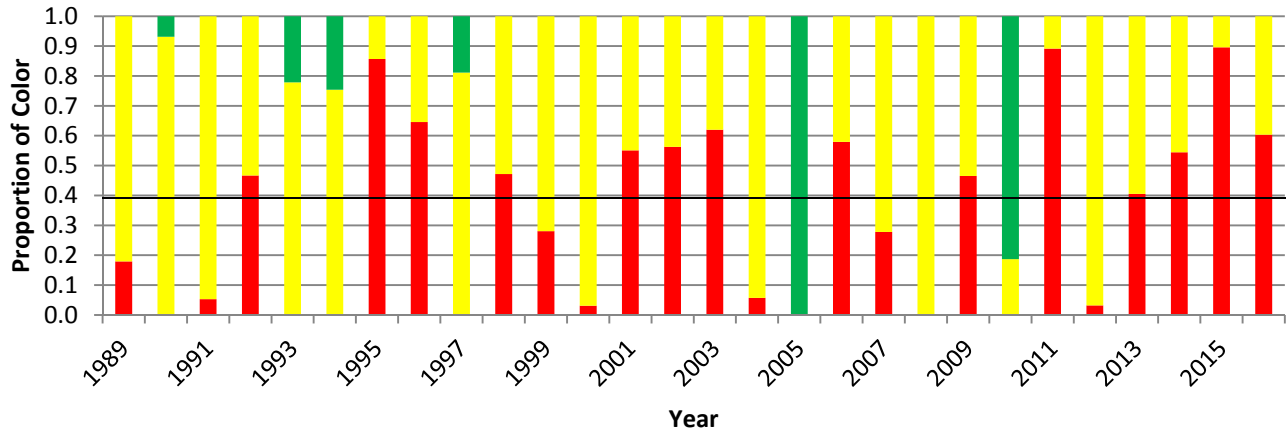
Figure 4. Annual TLA color proportions for spot from SEAMAP survey using 1989-2012 reference time period.



Maryland Juvenile Striped Bass Survey

- Since the Maryland survey was the only juvenile index used in the trigger exercise it was used by itself to compare to the other two composite characteristic indexes (harvest and abundance).
- The Maryland CPUE increased 422% in 2016 from 2015, however the 2015 index value was the lowest in the entire time series (Fig. 5).
- Mean annual CPUE was only above the LTM twice since 1998 with peak years occurring in 2005 and 2010. The large fluctuations in CPUE (and alternating red and green proportions in the TLA) were likely due to changes in annual recruitment and year-class strength rather than population changes as this is a juvenile fish index.
- The TLA trigger did trip in 2016 at the 60% threshold. In previous years of the index, the trigger would have also tripped at the 30% threshold in almost all of the years from 1995-2013 except in the two peak years of 2005 and 2010.
- The index tripping at the 30% level 2012-2014 and at the 60% level in 2015 and 2016 may be cause for some concern as the general decline in this index indicates a decline in spot recruitment in Maryland waters has been occurring for the past 20 years.

Figure 5. Annual TLA color proportions for the Maryland seine survey juvenile index using 1990-2012 reference period.

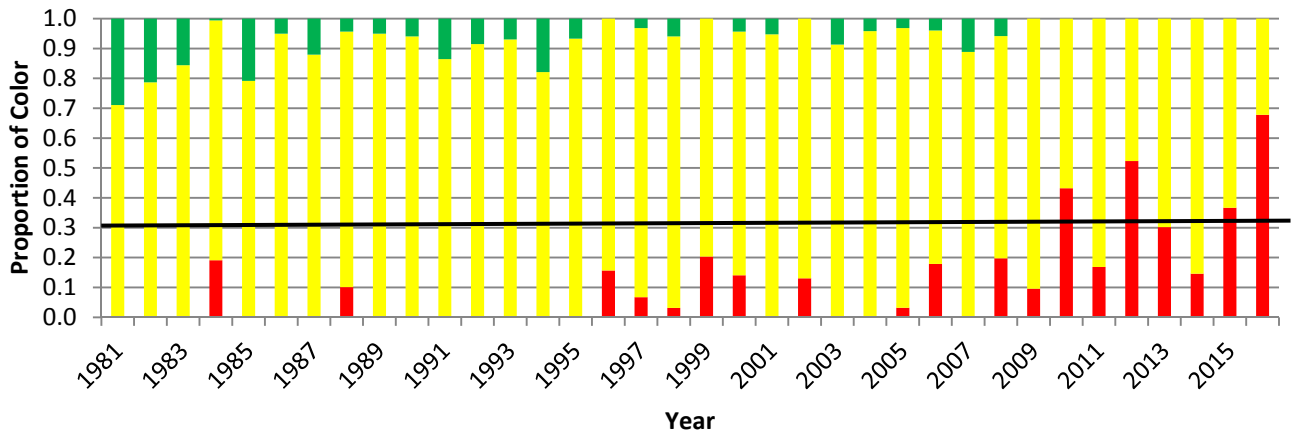


Traffic Light Analysis (Composite Indexes)

Harvest Composite Characteristic Index

- The harvest composite characteristic TLA shows the general decline in landings since 2008, with increasing proportions of red annually (Fig. 6).
- The composite characteristic did trip in 2016 with a 2 year red proportion greater than 30%. The proportion of red has shown an increasing trend recently and has triggered in 4 of the last 7 years.
- The increase in red proportion was likely driven more by the decline in commercial landings rather than the recreational harvest, particularly given the series low value in 2016.
- The continued declining trend in spot fishery landings was driven primarily by declining landings in the mid-Atlantic region where the majority of coastwide landings occur.

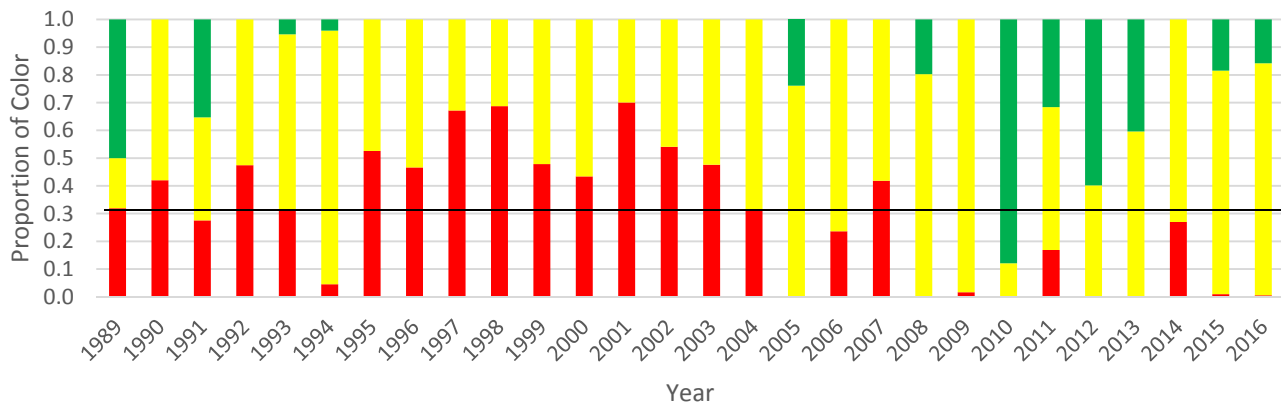
Figure 6. Annual TLA color proportions for harvest composite (commercial and recreational landings) for spot on the Atlantic coast of the US.



Abundance Composite Characteristic Index

- The TLA composite characteristic for adult spot (NMFS and SEAMAP surveys) showed very little change from 2015 with only a slight decline in the green proportion (Fig. 7).
- The slight increase in catch levels in the NMFS index and the slight decrease in the SEAMAP index resulted in only a slight change in the TLA for 2016.
- The composite characteristic TLA for the abundance indexes did not trigger in 2016.

Figure 7. Annual TLA color proportions for spot for composite characteristic of adult fishery independent surveys (NMFS and SEAMAP) using a 1989-2012 reference period.



Summary

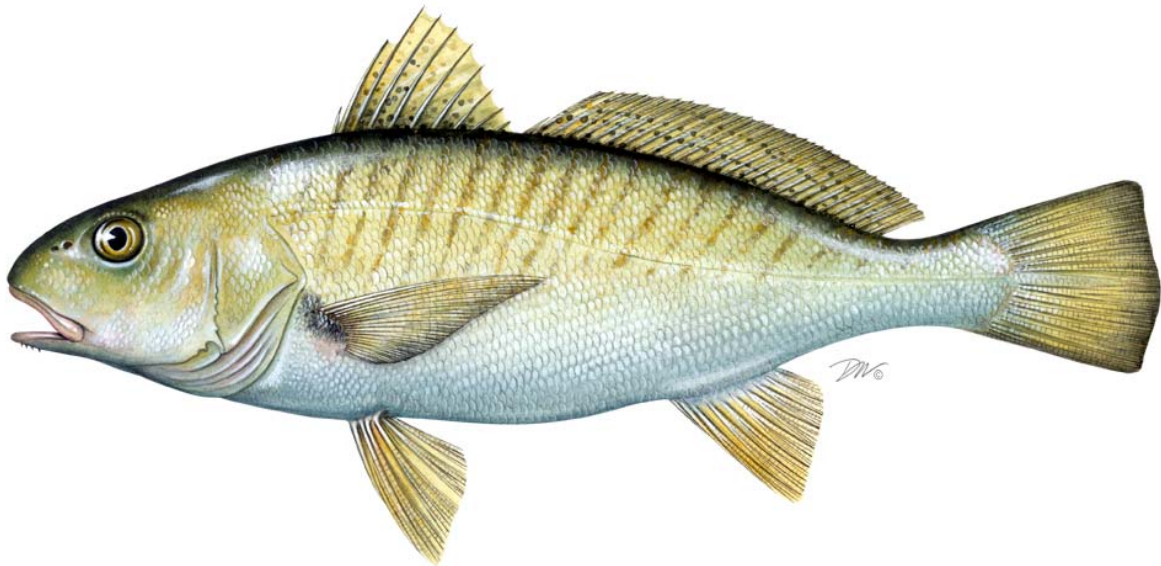
The TLA composite characteristic indexes tripped for juvenile spot index (60% threshold) but not for the adult composite characteristic index. The harvest composite characteristic also triggered at the 30% threshold in 2016, mostly due to declines in commercial harvest. Although the recreational index did not trigger at the 30% threshold it came very close (29.7%). With the benchmark stock assessment now complete, further refinement of the TLA for spot by the TC should be considered through either adding additional TLA metrics (bycatch, F, or SPR) or additional abundance indices (ChesMMAP, NEAMAP).

The recently completed Spot Stock Assessment (ASMFC, 2017) utilized age partitioning in the Catch Survey Analysis model (CSA) separating indices into age 0 and age 1+ (pre-recruits and recruits). The TC may want to consider a similar partitioning for the TLA if it can provide better information on annual changes as well as synchrony between the different indices.

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

ATLANTIC CROAKER
(Micropogonias undulatus)

2016 FISHING YEAR



Atlantic Croaker Plan Review Team

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Table of Contents

| | | |
|-------|--------------------------------------------------------------|----|
| I. | Status of the Fishery Management Plan..... | 1 |
| II. | Status of the Stock | 3 |
| III. | Status of the Fishery | 4 |
| IV. | Status of Assessment Advice | 5 |
| V. | Status of Research and Monitoring | 5 |
| VI. | Status of Management Measures and Issues..... | 7 |
| VII. | Implementation of FMP Compliance Requirements for 2015 | 10 |
| VIII. | Recommendations | 10 |
| IX. | References | 12 |
| X. | Figures..... | 13 |
| XI. | Tables | 17 |

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 |
| <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 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 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 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 better illustrates trends in the fishery through changes in the proportion of green, yellow, and red coloring.

Addenda I and II did not add or change any management measures or requirements. The only existing requirement is for states to submit an annual compliance report by July 1st 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, stock status is based on data and results of the 2010 stock assessment (ASMFC 2010), which is the most recent assessment that was recommended by peer review for management use. Results include revised biological reference points (below), which are ratio-based and apply to the entire coastwide resource (unlike those in Amendment 1). Overfishing is occurring if F/F_{MSY} is greater than 1 and the stock is considered overfished if $SSB/(SSB_{MSY}(1-M))$ is less than 1.

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

Atlantic croaker is not experiencing overfishing. According to the 2010 stock assessment, biomass has been increasing and fishing mortality decreasing since the late 1980s. Biomass conclusions are based on information from the data compiled for the assessment, namely increasing indices of relative abundance and expanding age structure in the catch and indices. Model estimated values of fishing mortality (F), spawning stock biomass (SSB), and biological reference points are too uncertain to be used to determine stock status. However, the ratio of F to F_{MSY} (the F needed to produce maximum sustainable yield) is reliable and can be used to determine that overfishing is not occurring. 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 in 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).

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

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

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

III. Status of the Fishery

Total Atlantic croaker harvest from New Jersey through the east coast of Florida in 2016 is estimated at 8.31 million pounds (Tables 2 and 3, Figure 3). This represents an 80% decline in total harvest since the peak of 41.2 million pounds in 2001 (79% commercial decline, 82% recreational decline). The commercial and recreational fisheries harvested 76.5% and 23.5% of the total, respectively. The vast majority of landings are from the Mid-Atlantic region (94% in 2016), and the recent decline in total landings is a result of both commercial and recreational landings declines in that region (Figure 4). Commercial and recreational landings in the South Atlantic region have been generally stable over the last decade; however, 2010 showed large decreases in the South Atlantic states' recreational harvests, followed by a slow general increase in recreational harvest in this region. Recreational and commercial harvests in the South Atlantic region rose to 5.8% of coastwide harvest in 2016 from 0.6% in 2010.

Atlantic coast commercial landings of Atlantic croaker exhibit a cyclical pattern, with low domains in the 1960s to early 1970s and the 1980s to early 1990s, and high domains in the mid-to-late 1970s and the mid-1990s to early 2000s (Figure 3). Commercial landings increased from a low of 3.7 million pounds in 1991 to 30.1 million pounds in 2001 (Table 2); however, landings have declined consistently since 2003 to 6.4 million pounds in 2016, which registers below the 1950-2016 average of 11.9 million pounds. Within the management unit, the majority of 2016 commercial landings came from Virginia (61%) and North Carolina (33%). The Potomac River Fisheries Commission (PRFC) had the next highest level, with 2.7% of coastwide landings.

From 1981-2016, recreational landings of Atlantic croaker from New Jersey through Florida have varied between 2.8 million fish (1.3 million pounds) and 13.2 million fish (11.1 million pounds; Tables 3 and 4, Figure 5). Landings generally increased until 2001, held stable from 2001-2006 before exhibiting a declining trend from 2007 through 2016. The 2016 landings are estimated at 4.5 million fish and 2.0 million pounds. Virginia was responsible for 67% of the 2016 recreational landings, in numbers of fish, followed by Florida, Maryland, and North Carolina (12.5%, 9.5%, and 8.1%, respectively).

The number of recreational releases increased over the time series until 2008, when numbers released began to generally decline (Figure 5). However, percentage of released recreational catch has remained stable, ranging from 52 to 61% from 2008-2016. In 2016, anglers released approximately 6.9 million fish, a decline from the 13.8 million fish released in 2013. Anglers released an estimated 61% of the croaker catch in 2016 (Figure 5).

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 Review Panel was unable to support some of the 2010 assessment results due to uncertainty regarding the estimation of Atlantic croaker discards in the shrimp trawl fishery, and the application of estimates in modeling. Specifically, model-estimated values of stock size, fishing mortality, and biological reference points are too uncertain for use; however, the trends in model-estimated parameters and ratio-based fishing F reference points are considered reliable. Despite the uncertainty in assessment results caused by shrimp trawl bycatch, the Review Panel concluded that it is unlikely that the stock is in trouble. The stock is not experiencing overfishing, biomass has been trending up, commercial catches are stable, and discards from the shrimp trawl fishery have been reduced.

A benchmark stock assessment was conducted in 2017, but was not recommended for management use due to uncertainty in biomass estimates due to conflicting signals among abundance indices and catch time series as well as sensitivity of model results to assumptions and model inputs. One noted improvement in this assessment was in the estimation of Atlantic croaker discards by the shrimp trawl fishery. The Review Panel recommended incorporation of shrimp trawl discard estimates into the annual monitoring of Atlantic croaker through the TLA. The Plan Review Team supports this recommendation.

V. Status of Research and Monitoring

There are no research or monitoring programs required of the states except for the submission of an annual compliance report. The following fishery-dependent (other than catch and effort

data) and fishery-independent monitoring programs were reported in the 2016 compliance reports.

Fishery-Dependent Monitoring

- New Jersey: initiated biological monitoring of commercially harvested Atlantic croaker in 2006 in conjunction with ACCSP (2016 n=166)
- Delaware: collects trip-based information on pounds landed, area fished, effort, and gear type data through mandatory monthly state logbook reports submitted by fishermen.
- Maryland: commercial pound net fishery biological sampling (2,239 length measurements, 175 samples aged in 2016, one fish older than age seven).
- PRFC: has a mandatory commercial harvest daily reporting system, with reports due weekly.
- Virginia: commercial fishery biological sampling (9,453 length measurements, 9,434 weight measurements, 346 otolith ages, and 895 sex determinations in 2016)
- North Carolina: commercial fishery biological sampling since 1982 for length (2016 n=6,492), weight, otolith, sex determination, and reproductive condition.
- South Carolina: recreational fishery biological sampling via SCDNR State Finfish Survey, MRIP, and a SCDNR-managed mandatory trip reporting system for licensed charter boat operators. In 2013, SCDNR took over its portion of MRIP data collection.
- Georgia: collects biological information, including length, sex, and maturity stage, through the Marine Sportfish Carcass Recovery Project (3 fish in 2016)
- Florida: commercial fishery biological sampling

Fishery-Independent Monitoring

- New Jersey: 3 nearshore ocean (within 12 nm) juvenile trawl surveys (New Jersey Ocean Trawl Survey, 1988-present: 2016 CPUE was well below time-series average; nearshore Delaware Bay juvenile trawl survey, 1991-present: 2016 survey index was well below time series average but above 2015 value; Delaware River juvenile seine survey, 1980-present: 2016 survey index was below time series average but above 2015 value)
- Delaware: offshore Delaware Bay adult finfish trawl survey (1990-present; 2016 #/tow = 2.22; 27% decrease in relative abundance from 2015 index, below mean and median for time series); nearshore Delaware Bay juvenile finfish trawl survey (1980-present; 2016 index decreased from 8.48 in 2015 to 1.17; Inland Bays index decreased from 1.19 in 2015 to 0.43 in 2016).
- Maryland: summer gill net survey was initiated in 2013 on lower Choptank (steady decline in catch; 476 fish in 2013, 269 in 2014, 21 in 2015; 32 fish were captured in 2016); Atlantic coast bays juvenile otter trawl survey (standardized from 1989-present; 2016 GM of 1.10 fish/hectare above time series median but below time series mean); Chesapeake Bay juvenile trawl index (standardized from 1989-present; CPUE increased from 0.21 in 2015 to 0.81 in 2016).
- PRFC: Maryland DNR conducts an annual juvenile beach haul seine survey in the Potomac River (1954-present; YOY GM increased from 0 in 2014 and 2015 to 0.27 in 2016).
- Virginia: Independent monitoring results are not yet available for the 2015 fishing year. VIMS Juvenile Finfish and Blue Crab Trawl Survey (1988-present; 2015 index representing the 2014 year class was 0.73, which is down from the 2014 value of 1.55).

- North Carolina: Pamlico Sound juvenile trawl survey (1987-present; 2016 juvenile abundance index (mean number of individuals/tow) was 369.8, above the time series average)
- South Carolina: estuarine electroshock survey for juveniles (2001-present; 2016 CPUE increased slightly since 2015, third consecutive year below the long-term mean); SEAMAP shallow water (15-30 ft) trawl survey from Cape Hatteras to Cape Canaveral (1989-present; 2016 CPUE decreased by 41% from 2015; inshore estuarine trammel net survey for adults (May-September, 1991-present; 2016 CPUE decreased 59.5% from 2015); SCECAP estuarine trawl survey (1999-present, primarily targets juveniles, 2016 CPUE increased from 2015, well below long-term mean and continuing a declining trend).
- Georgia: Marine Sportfish Population Health Survey (trammel and gill net surveys in the Altamaha River Delta and Wassaw estuary, 2002-present; 2016 n=180); Ecological Monitoring Survey (trawl, 2003-present; 2016 n=39,664; CPUE (#/tow) increased from 55.53 in 2015 to 95.35 in 2016).
- Florida: juvenile seine survey (2002-present; 2016 index continued variable trend with an increase from 2015); juvenile trawl survey (2002-present; 2016 index continued variable trend with an increase from 2015); adult haul seine survey (2001-present; 2016 index value decreased from 2015)

The Northeast Fishery Science Center 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. Regionally, mean CPUE (catch-per-unit-effort) of Atlantic croaker has increased from north to south. Since 1994, there has been an increase in annual catch variability. Catch levels in 2016 decreased 34.6% from 2015 and were above the long term mean.

The Southeast Area Monitoring and Assessment Program - South Atlantic (SEAMAP-SA) Coastal Survey (previously known as the Shallow Water Trawl Survey) began in 1986 and is conducted by the SCDNR Marine Resources Division (MRD). This survey has provided long-term, fisheries-independent data characterizing the seasonal abundance and biomass of finfish and other organisms that are accessible by high-rise trawls from the coastal zone of the South Atlantic Bight (SAB) between Cape Hatteras, North Carolina, and Cape Canaveral, Florida. Croaker abundance index values have generally trended upward since the early 2000s. The 2016 index decreased 40.8% from the time series high in 2015 and was above the long-term mean.

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.

Traffic Light Approach

Addendum II established the TLA as the new management framework for Atlantic croaker. Under this management program, if thresholds for both population characteristics (harvest and adult abundance) achieve or exceed the proportion of threshold for the specified three year period, management action will be taken.

Analysis of the harvest composite index for 2016 shows that this population characteristic tripped for a fourth consecutive year (Figure 6). The mean proportion of red color from 2014-2016 was 58.1%, well above the 30% threshold. The harvest composite index was comprised of commercial and recreational landings. Both commercial and recreational indices would have individually tripped in 2014 at the 30% level. The TLA for commercial landings was just below the 60% threshold in 2016, and has exceeded 50% in three consecutive years.

The abundance composite TLA index was broken into two components based on age composition. The adult composite index was generated from the NMFS and SEAMAP surveys, since the majority of Atlantic croaker captured in those surveys were ages 1+. The juvenile composite index was generated from the NC program 195 and VIMS surveys because these two captured primarily young-of-the-year Atlantic croaker.

All four TLA composite abundance indices showed increases in both 2015 and 2016 with no red proportion occurring in either year. The adult composite TLA characteristic (Figure 7) did not trigger in 2016 with no red proportion and no red in the two previous years. The juvenile composite characteristic index (Figure 8) also had no red proportion for 2015 or 2016, indicating an increase in abundance since 2014. The higher annual variability for the different color proportions in the juvenile composite characteristic, in comparison to the adult composite characteristic, is likely a reflection annual recruitment variability rather than population trends.

Overall, management triggers were not tripped in 2016 since both population characteristics (harvest and abundance) were not above the 30% threshold for the 2014-2016 time period. This continues a trend of disconnect between the harvest and abundance indices since the mid-2000s, with the harvest index generally decreasing and abundance index generally increasing.

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, thus *de minimis* status does not exempt states from any measures.

In the annual compliance reports, the following states requested *de minimis* status: Delaware (commercial fishery), South Carolina (commercial fishery), Georgia (commercial fishery), and Florida (commercial fishery). The commercial and recreational *de minimis* criteria for 2016 are based on 1% of the average coastwide 2014-2016 landings in each fishery: 67,705 pounds for the commercial fishery and 25,419 pounds for the recreational fishery. The Delaware commercial fishery qualifies for *de minimis* status with a three-year average of 4,806 pounds. The South Carolina commercial fishery qualifies for *de minimis* status with a three-year average of 206 pounds. The Georgia commercial fishery qualifies for *de minimis* status with a three-year average of zero pounds. The Florida commercial fishery qualifies for *de minimis* status with a three-year average of 46,612 pounds.

Changes to State Regulations

In 2016, North Carolina enacted several gill net restrictions for coastal waters pertaining to area closures/openings, gear modifications, and attendance rules to avoid interactions with endangered species. These restrictions may indirectly affect the harvest and bycatch of Atlantic croaker and are defined by North Carolina Proclamations: M-32-2016, M-30-2016, M-27-2016, M-25-2016, M-24-2016, M-23-2016, M-20-2016, M-19-2016, M16-2016, M-13-2016, M-12-2016, M-9-2016, M-8-2016, and M-5-2016.

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.

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. 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 NMFS Pelagic Observer Program provides data to estimate these discards for use in assessments; however, the time series is limited and only discards from gill nets and otter trawls could be estimated for the 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 scrap 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 2015

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

VIII. Recommendations

Management and Regulatory Recommendations

- Encourage the use of circle hooks to minimize recreational discard mortality.

- Consider approval of the *de minimis* requests from Delaware, South Carolina, Georgia, and Florida.
- Consider the basic research and monitoring information needed for informed management in light of the budgetary constraints limiting all state governments.

Research and Monitoring Recommendations

High Priority

- Increase observer coverage for commercial discards, particularly the shrimp trawl fishery. Develop a standardized, representative sampling protocol for observers to use to increase the collection of individual lengths and ages of discarded finfish.
- Describe the coast-wide distribution, behavior, and movement of croaker by age, length, and season, with emphasis on collecting larger, older fish.
- Continue state and multi-state fisheries-independent surveys throughout the species range and subsample for individual lengths and ages. Ensure NEFSC trawl survey continues to take lengths and ages. Examine potential factors affecting catchability in long-term fishery independent surveys.
- Quantify effects of BRDs and TEDs implementation in the shrimp trawl fishery by examining their relative catch reduction rates on Atlantic croaker.
- Continue to develop estimates of length-at-maturity and year-round reproductive dynamics throughout the species range. Assess whether temporal or density-dependent shifts in reproductive dynamics have occurred.
- Re-examine historical ichthyoplankton studies for an indication of the magnitude of estuarine and coastal spawning, as well as for potential inclusion as indices of spawning stock biomass in future assessments. Pursue specific estuarine data sets from the states (NJ, VA, NC, SC, DE, MD) and coastal data sets (MARMAP, EcoMon).

Medium Priority

- Conduct studies of discard mortality for recreational and commercial fisheries by each gear type in regions where removals are highest.
- In the recreational fishery, develop sampling protocol for collecting lengths of discarded finfish and collect otolith age samples from retained fish.
- Encourage fishery-dependent biological sampling, with proportional landings representative of the distribution of the fisheries. Develop and communicate clear protocols on truly representative sampling.
- Investigate environmental covariates in stock assessment models including climate cycles (e.g., Atlantic Multi-decadal Oscillation, AMO, and El Niño Southern Oscillation, El Niño) and recruitment and/or year class strength, spawning stock biomass, stock distribution, maturity schedules, and habitat degradation.
- Utilize NMFS Ecosystem Indicators bi-annual reports to consider folding indicators into the assessment; identify mechanisms for how environmental indicators affect the stock.
- Encourage efforts to recover historical landings data, determine whether they are available at a finer scale for the earliest years than are currently reported.
- Collect data to develop gear-specific fishing effort estimates and investigate methods to develop historical estimates of effort.

- Develop gear selectivity studies for commercial fisheries with emphasis on age 1+ fish.
- Conduct studies to measure female reproductive output at size and age (fecundity, egg and larval quality) and impact on assessment models and biomass reference points.
- Develop and implement sampling programs for state-specific commercial scrap and bait fisheries in order to monitor the relative importance of Atlantic croaker. Incorporate biological data collection into the program.
- Investigate the relationship between estuarine nursery areas and their proportional contribution to adult biomass, i.e., are select nursery areas along Atlantic coast ultimately contributing more to SSB than others, reflecting better quality juvenile habitat?

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.

X. Figures

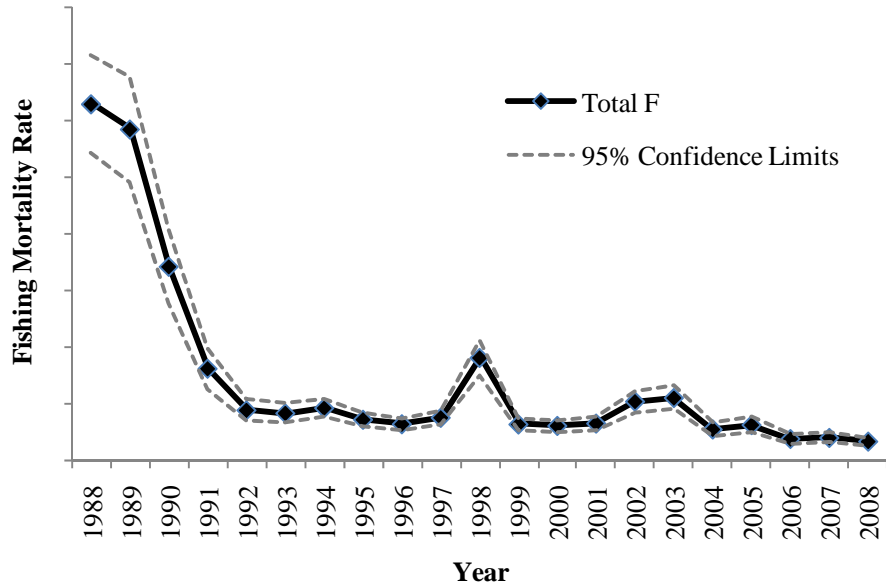


Figure 1. Trend in estimated total fishing mortality rate (F) of Atlantic croaker
 (Absolute estimates of F are unreliable due to uncertainty regarding the estimation of Atlantic croaker discards in the shrimp trawl fishery, and the application of estimates in modeling. Source: ASMFC 2010.)

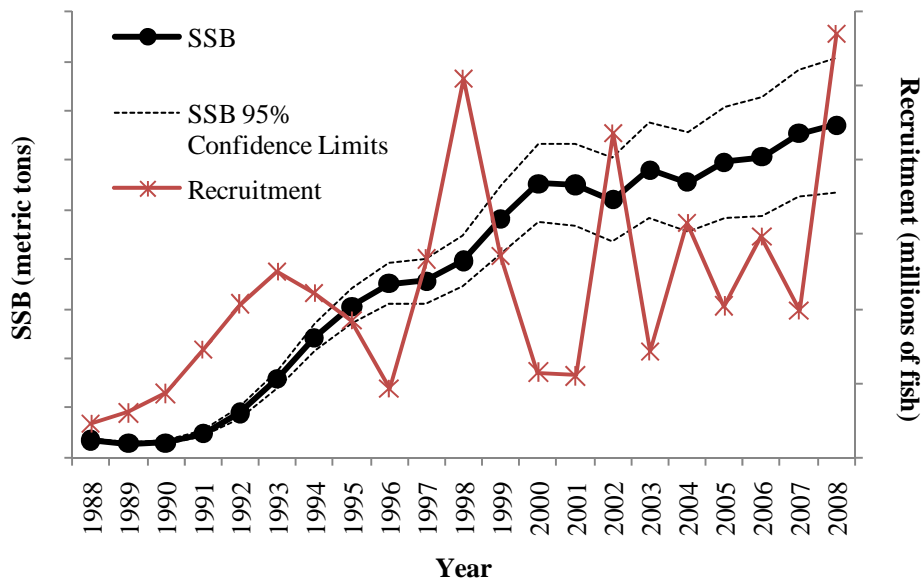


Figure 2. Trends in estimated spawning stock biomass (SSB, metric tons) and age-1 recruitment (numbers of fish) of Atlantic croaker
 (Absolute estimates of stock size are unreliable due to uncertainty regarding the estimation of Atlantic croaker discards in the shrimp trawl fishery, and the application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

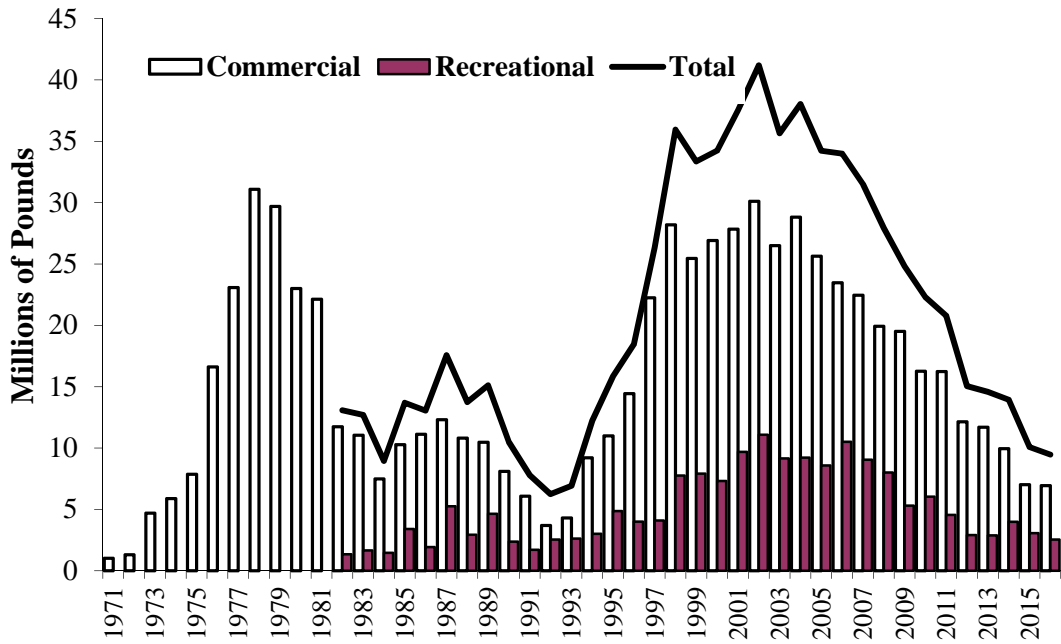


Figure 3. Atlantic croaker commercial, recreational, and total landings (pounds)
 (See Tables 2 and 3 for values and source information. Commercial landings estimate for 2015 is preliminary. Reliable recreational landings estimates are not available before 1981.)

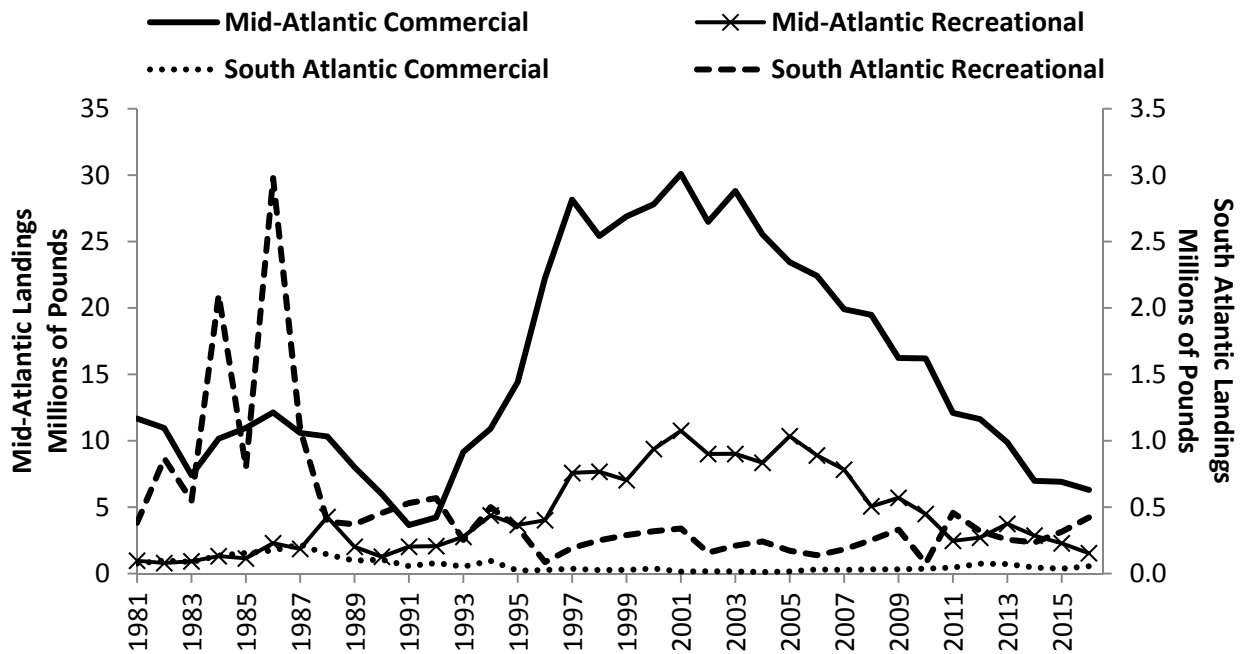


Figure 4. Mid-Atlantic (NJ-NC) and South Atlantic (SC-FL) landings (pounds)
 (See Tables 2 and 3 for values and source information.)

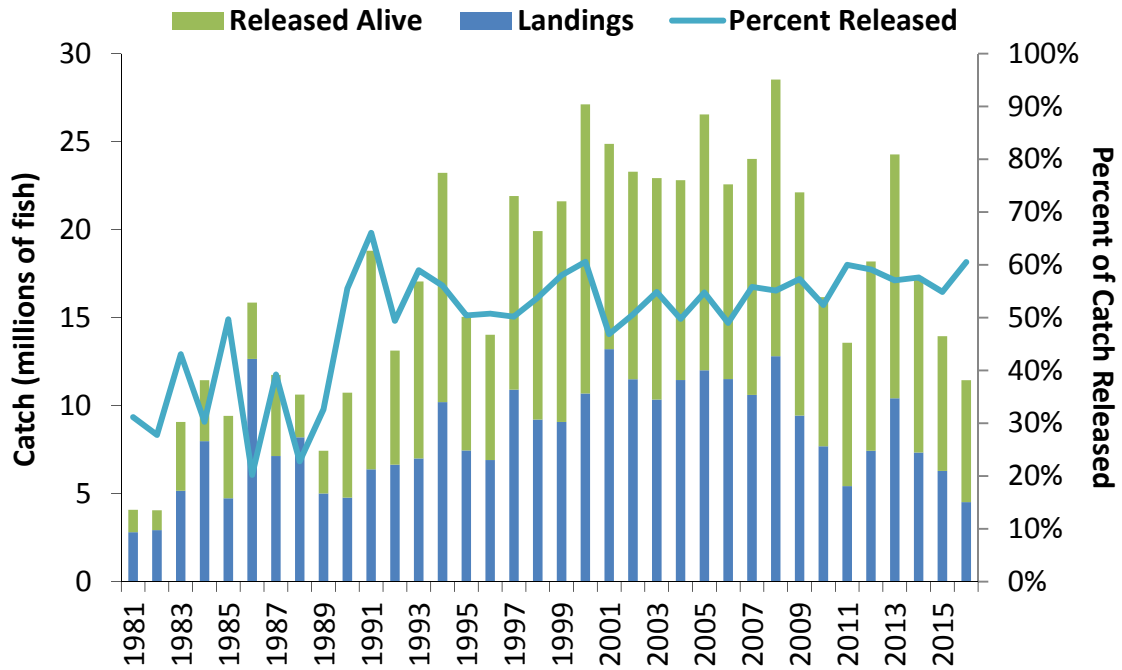


Figure 5. Recreational catch (landings and alive releases, in numbers) and the percent of catch that is released, 1981-2015
 (See Tables 4 and 5 for values and source information.)

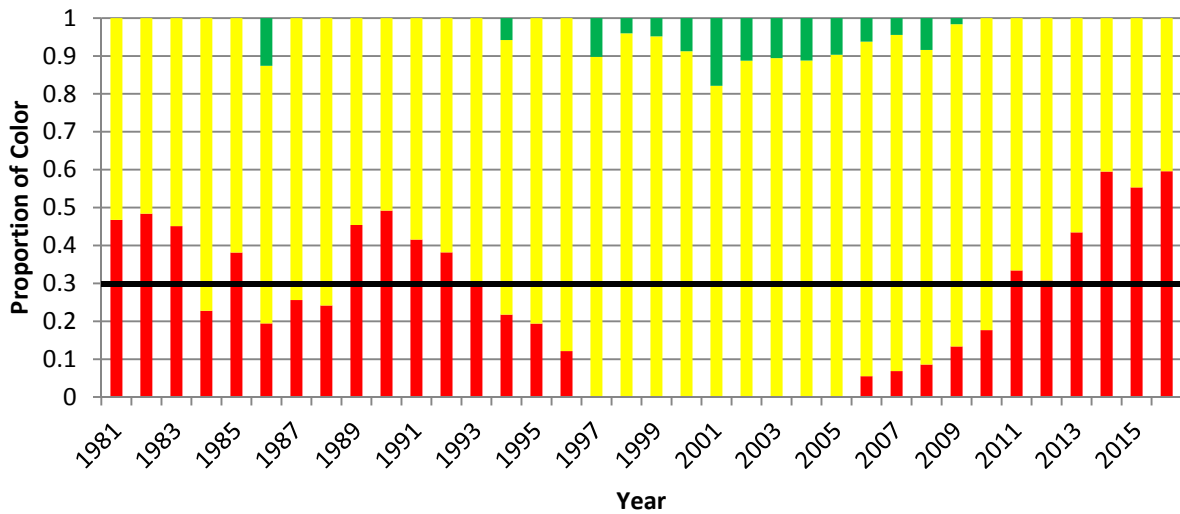


Figure 6. Annual color proportions for the harvest composite TLA of Atlantic croaker recreational and commercial landings.

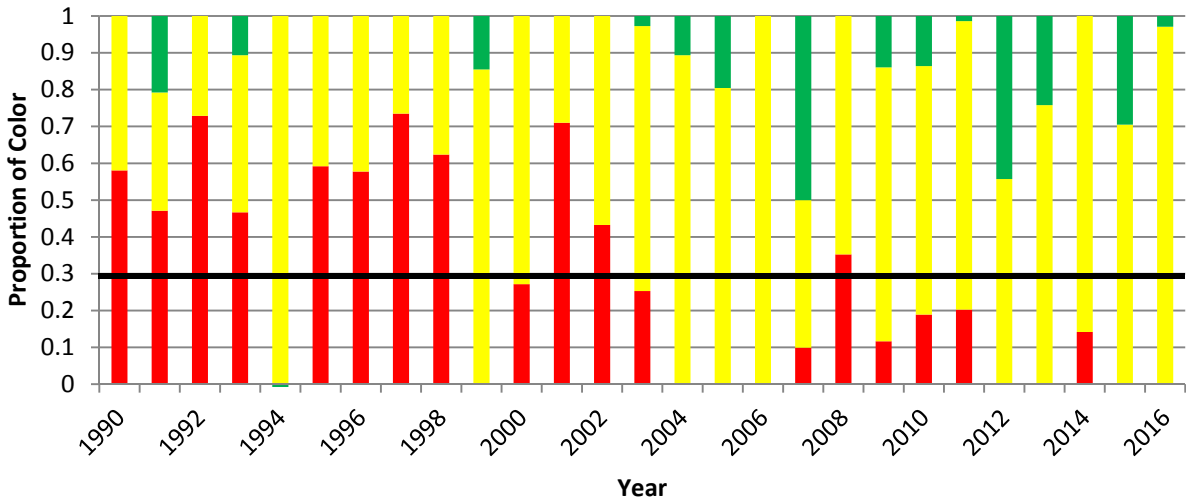


Figure 7. Adult croaker TLA composite characteristic index (NMFS and SEAMAP surveys).

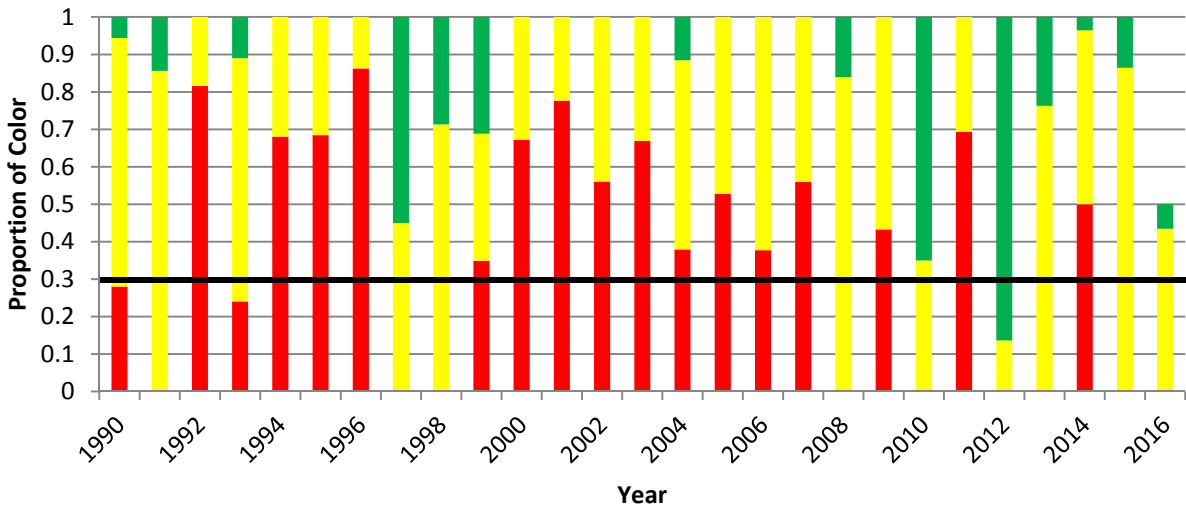


Figure 8. Juvenile croaker TLA composite characteristic index (NC 195 and VIMS surveys).
(2016 VIMS survey is not yet available.)

XI. Tables

Table 1. Summary of state regulations for Atlantic croaker in 2016*

| 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 | |
| SC | mandatory for-hire logbooks, small Sciaenidae species aggregate bag limit of 50 fish/day | |
| 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, 1981-2015

(Estimates for 2016 are preliminary. Sources: 2017 state compliance reports for 2016 fishing year and for years prior to 2016, personal communication with ACCSP, Arlington, VA [07/18/2017], except DE [state compliance reports 1985-2016 and ACCSP for years prior to 1985], MD [state compliance reports only], and Virginia [state compliance reports only].)

| Year | NJ | DE | MD | PRFC | VA | NC | SC | GA | FL | Total |
|------|-----------|--------|-----------|-----------|------------|------------|-------|-------|---------|------------|
| 1981 | 23,500 | | 2,104 | 648 | 429,800 | 11,205,342 | * | 1,038 | 72,112 | 11,734,544 |
| 1982 | 100 | | 7,091 | 188 | 119,300 | 10,824,953 | 386 | 2,177 | 95,357 | 11,049,552 |
| 1983 | 200 | | 417 | 1,549 | 150,400 | 7,249,680 | * | 1,097 | 81,737 | 7,485,080 |
| 1984 | 57,700 | | 27,072 | 73,701 | 817,700 | 9,170,775 | 3,793 | * | 131,375 | 10,282,116 |
| 1985 | 48,800 | 66 | 9,510 | 19,854 | 2,171,821 | 8,714,432 | * | | 115,641 | 11,080,124 |
| 1986 | 106,000 | 466 | 135,922 | 99,373 | 2,367,000 | 9,424,828 | 924 | | 173,531 | 12,308,044 |
| 1987 | 357,600 | 770 | 119,409 | 102,691 | 2,719,500 | 7,289,191 | 698 | 553 | 217,995 | 10,808,407 |
| 1988 | 30,100 | 162 | 98,855 | 12,796 | 1,749,200 | 8,434,415 | 2,614 | 304 | 140,051 | 10,468,497 |
| 1989 | 137,100 | | 89,173 | 5,579 | 949,649 | 6,824,088 | * | * | 95,021 | 8,100,610 |
| 1990 | 644 | 42 | 2,473 | 5,115 | 201,353 | 5,769,512 | 1,190 | * | 104,402 | 6,084,731 |
| 1991 | 31,292 | 1,111 | 6,183 | 996 | 164,126 | 3,436,960 | * | * | 56,739 | 3,697,407 |
| 1992 | 51,600 | 687 | 17,050 | 17,692 | 1,339,353 | 2,796,612 | | * | 79,040 | 4,302,034 |
| 1993 | 183,414 | 2,435 | 114,159 | 262,482 | 5,326,293 | 3,267,652 | * | | 52,031 | 9,208,466 |
| 1994 | 117,256 | 3,044 | 158,918 | 240,271 | 5,718,085 | 4,615,754 | * | * | 96,018 | 10,949,346 |
| 1995 | 334,654 | 12,106 | 489,506 | 606,184 | 6,949,639 | 6,021,284 | * | * | 22,879 | 14,436,252 |
| 1996 | 621,889 | 9,681 | 792,326 | 1,427,285 | 9,320,283 | 9,961,834 | | * | 26,045 | 22,159,343 |
| 1997 | 1,994,446 | 10,509 | 1,088,969 | 1,518,196 | 12,829,212 | 10,711,667 | * | * | 36,577 | 28,189,576 |
| 1998 | 1,029,332 | 10,384 | 1,006,529 | 610,885 | 11,285,458 | 10,865,897 | | * | 26,418 | 24,834,903 |
| 1999 | 2,071,046 | 15,068 | 948,191 | 1,190,138 | 12,476,074 | 10,185,507 | | * | 26,824 | 26,912,848 |
| 2000 | 2,130,465 | 11,118 | 902,379 | 1,812,130 | 12,822,400 | 10,122,676 | | * | 31,566 | 27,832,734 |
| 2001 | 1,389,837 | 21,759 | 1,488,815 | 1,963,294 | 13,214,731 | 12,017,424 | | * | 16,511 | 30,112,370 |
| 2002 | 1,828,484 | 10,515 | 894,879 | 1,421,094 | 12,104,334 | 10,189,153 | * | * | 18,216 | 26,466,675 |
| 2003 | 1,575,738 | 16,612 | 713,205 | 1,128,003 | 10,935,574 | 14,429,197 | 140 | * | 18,868 | 28,817,337 |
| 2004 | 2,096,305 | 30,369 | 1,354,982 | 1,631,596 | 8,535,638 | 11,993,488 | * | * | 11,407 | 25,653,785 |
| 2005 | 1,847,753 | 36,624 | 972,801 | 481,912 | 8,211,802 | 11,903,292 | 41 | * | 16,809 | 23,471,033 |
| 2006 | 1,617,227 | 19,307 | 466,833 | 670,276 | 9,252,110 | 10,396,554 | 160 | * | 30,520 | 22,452,986 |
| 2007 | 1,357,999 | 13,522 | 477,887 | 188,567 | 10,557,370 | 7,271,162 | * | * | 26,726 | 19,893,233 |
| 2008 | 946,339 | 10,465 | 592,211 | 337,062 | 11,796,771 | 5,791,766 | 116 | * | 30,407 | 19,505,137 |
| 2009 | 585,552 | 16,341 | 448,550 | 234,101 | 8,808,677 | 6,135,437 | 75 | | 32,151 | 16,260,884 |
| 2010 | 342,116 | 6,182 | 490,067 | 162,571 | 7,879,847 | 7,312,159 | * | | 37,229 | 16,230,171 |
| 2011 | 458,397 | 12,252 | 704,019 | 243,196 | 5,611,885 | 5,054,186 | * | | 47,649 | 12,131,583 |
| 2012 | 363,381 | 2,811 | 908,619 | 273,849 | 6,963,815 | 3,106,616 | * | | 74,527 | 11,693,617 |
| 2013 | 332,813 | 6,700 | 850,336 | 130,285 | 6,626,517 | 1,927,938 | * | | 76,463 | 9,951,052 |
| 2014 | 265,166 | 9,647 | 479,079 | 177,777 | 3,406,958 | 2,629,908 | 247 | | 45,587 | 7,014,369 |
| 2015 | 81,311 | 3,975 | 288,331 | 118,996 | 4,585,623 | 1,819,067 | 69 | | 39,096 | 6,936,468 |

| | | | | | | | | | | |
|------|--------|-----|---------|---------|-----------|-----------|-----|--|--------|-----------|
| 2016 | 55,210 | 795 | 101,141 | 168,889 | 3,882,869 | 2,092,135 | 302 | | 55,154 | 6,356,495 |
|------|--------|-----|---------|---------|-----------|-----------|-----|--|--------|-----------|

* confidential data

Table 3. Recreational harvest (pounds) of Atlantic croaker by state, 1981-2015

(Source: personal communication with NMFS Fisheries Statistics Division. [07/18/2017])

| Year | NJ | DE | MD | VA | NC | SC | GA | FL | Total |
|------|-----------|---------|-----------|-----------|---------|---------|---------|-----------|------------|
| 1981 | 582 | 2,317 | | 535,297 | 426,240 | 67,284 | 9,665 | 305,547 | 1,346,932 |
| 1982 | | | 70,276 | 455,250 | 264,607 | 67,015 | 45,161 | 754,956 | 1,657,265 |
| 1983 | | | 32,053 | 486,006 | 395,402 | 14,158 | 25,412 | 510,599 | 1,463,630 |
| 1984 | | | 86,462 | 634,870 | 584,660 | 161,661 | 80,684 | 1,856,599 | 3,404,936 |
| 1985 | | | 17,169 | 843,414 | 278,214 | 72,780 | 40,421 | 684,449 | 1,936,447 |
| 1986 | | 2,595 | 116,542 | 2,034,337 | 126,888 | 173,028 | 21,504 | 2,783,651 | 5,258,545 |
| 1987 | | | 191,628 | 1,306,814 | 352,346 | 64,696 | 14,947 | 1,005,053 | 2,935,484 |
| 1988 | | 826 | 926,399 | 2,390,573 | 935,460 | 54,313 | 20,313 | 316,900 | 4,644,784 |
| 1989 | | 283 | 19,189 | 1,329,680 | 658,567 | 80,580 | 21,138 | 268,335 | 2,377,772 |
| 1990 | | 112 | 37,873 | 875,427 | 347,183 | 123,795 | 205,352 | 127,525 | 1,717,267 |
| 1991 | 4,264 | 10,972 | 117,210 | 1,728,021 | 157,660 | 16,173 | 54,116 | 460,453 | 2,548,869 |
| 1992 | | 3,292 | 53,556 | 1,768,962 | 233,533 | 28,512 | 132,596 | 407,672 | 2,628,123 |
| 1993 | 844 | 9,640 | 476,866 | 1,993,915 | 282,910 | 18,005 | 55,604 | 180,517 | 3,018,301 |
| 1994 | 818 | 2,892 | 991,166 | 3,024,118 | 351,230 | 128,306 | 34,048 | 337,474 | 4,870,052 |
| 1995 | 9,515 | 82,863 | 567,149 | 2,675,381 | 326,135 | 25,386 | 20,862 | 301,918 | 4,009,209 |
| 1996 | 39,099 | 205,527 | 702,037 | 2,716,759 | 346,501 | 14,480 | 21,797 | 50,038 | 4,096,238 |
| 1997 | 278,758 | 340,198 | 1,117,999 | 5,522,195 | 309,457 | 53,863 | 26,272 | 113,096 | 7,761,838 |
| 1998 | 135,733 | 293,561 | 1,150,459 | 5,920,436 | 161,117 | 76,821 | 30,966 | 141,756 | 7,910,849 |
| 1999 | 301,957 | 522,201 | 1,024,398 | 4,969,283 | 212,991 | 26,356 | 32,375 | 231,694 | 7,321,255 |
| 2000 | 1,125,730 | 483,963 | 2,672,996 | 4,888,910 | 201,306 | 13,457 | 62,390 | 242,914 | 9,691,666 |
| 2001 | 1,132,214 | 304,126 | 1,278,699 | 7,674,759 | 355,009 | 10,750 | 7,844 | 320,487 | 11,083,888 |
| 2002 | 268,423 | 250,900 | 1,162,278 | 7,075,130 | 242,184 | 29,343 | 10,622 | 117,880 | 9,156,760 |
| 2003 | 682,698 | 262,113 | 2,069,176 | 5,674,111 | 317,606 | 59,399 | 71,881 | 79,397 | 9,216,381 |
| 2004 | 859,373 | 307,312 | 1,078,951 | 5,792,487 | 306,029 | 69,510 | 15,597 | 156,395 | 8,585,654 |
| 2005 | 1,193,848 | 750,857 | 987,379 | 7,240,971 | 168,797 | 34,922 | 14,995 | 121,320 | 10,513,089 |
| 2006 | 632,085 | 717,803 | 865,433 | 6,460,336 | 222,286 | 16,240 | 9,210 | 112,512 | 9,035,905 |
| 2007 | 453,854 | 321,200 | 806,826 | 6,111,612 | 131,185 | 11,109 | 12,756 | 159,077 | 8,007,619 |
| 2008 | 527,179 | 322,166 | 465,064 | 3,612,065 | 132,731 | 16,212 | 12,948 | 223,121 | 5,311,486 |
| 2009 | 114,015 | 240,468 | 1,504,806 | 3,708,788 | 131,742 | 71,517 | 36,771 | 222,239 | 6,030,346 |
| 2010 | 36,063 | 41,533 | 976,143 | 3,185,485 | 241,993 | 11,970 | 10,067 | 56,023 | 4,559,277 |
| 2011 | 21,460 | 52,889 | 444,595 | 1,837,183 | 99,298 | 240,665 | 21,548 | 194,848 | 2,912,486 |
| 2012 | 96,366 | 63,037 | 535,325 | 1,905,100 | 105,530 | 12,433 | 13,503 | 292,365 | 3,023,659 |
| 2013 | 539,125 | 103,444 | 737,291 | 2,217,664 | 141,880 | 32,138 | 17,209 | 205,970 | 3,994,721 |
| 2014 | 205,388 | 207,903 | 607,046 | 1,602,504 | 227,949 | 35,785 | 32,833 | 165,353 | 3,084,761 |
| 2015 | 99,768 | 73,579 | 432,325 | 1,479,567 | 190,808 | 76,531 | 37,363 | 200,948 | 2,590,889 |
| 2016 | 2,318 | 3,636 | 110,398 | 1,269,504 | 141,571 | 16,695 | 17,637 | 388,304 | 1,950,063 |

Table 4. Recreational harvest (numbers) of Atlantic croaker by state, 1981-2015

(Source: personal communication with NMFS Fisheries Statistics Division. [07/18/2017])

| Year | NJ | DE | MD | VA | NC | SC | GA | FL | Total |
|------|-----------|---------|-----------|-----------|-----------|---------|---------|-----------|------------|
| 1981 | 1,054 | 3,003 | 0 | 964,013 | 1,043,240 | 165,742 | 35,591 | 598,896 | 2,811,539 |
| 1982 | | | 10,452 | 273,039 | 596,493 | 193,554 | 169,749 | 1,682,619 | 2,925,906 |
| 1983 | | | 108,355 | 2,154,133 | 1,620,909 | 60,811 | 75,173 | 1,148,227 | 5,167,608 |
| 1984 | | | 211,035 | 2,047,720 | 2,147,871 | 588,114 | 202,364 | 2,781,742 | 7,978,846 |
| 1985 | | | 21,276 | 2,284,334 | 723,933 | 260,265 | 144,341 | 1,306,955 | 4,741,104 |
| 1986 | | 392 | 123,578 | 6,384,966 | 356,742 | 599,442 | 69,887 | 5,118,552 | 12,653,559 |
| 1987 | 0 | 0 | 208,488 | 3,234,224 | 904,030 | 166,978 | 44,783 | 2,580,727 | 7,139,230 |
| 1988 | | 604 | 1,005,452 | 4,048,690 | 2,256,128 | 144,057 | 64,093 | 685,778 | 8,204,802 |
| 1989 | | 478 | 22,871 | 2,203,504 | 2,131,763 | 217,023 | 72,598 | 359,417 | 5,007,654 |
| 1990 | | 281 | 100,673 | 2,374,679 | 1,063,452 | 346,631 | 585,380 | 304,064 | 4,775,160 |
| 1991 | 16,235 | 28,837 | 288,471 | 4,298,542 | 434,067 | 100,816 | 184,435 | 1,030,115 | 6,381,518 |
| 1992 | 0 | 9,281 | 117,427 | 4,524,040 | 723,823 | 74,051 | 440,185 | 754,595 | 6,643,402 |
| 1993 | 2,552 | 19,352 | 805,560 | 4,990,098 | 755,998 | 32,700 | 89,734 | 304,067 | 7,000,061 |
| 1994 | 1,567 | 4,970 | 1,633,581 | 6,494,691 | 1,179,735 | 188,520 | 102,974 | 599,032 | 10,205,070 |
| 1995 | 15,184 | 122,720 | 827,183 | 5,029,708 | 850,606 | 75,422 | 100,826 | 438,076 | 7,459,725 |
| 1996 | 35,037 | 221,423 | 775,115 | 4,997,021 | 662,240 | 37,464 | 61,957 | 116,575 | 6,906,832 |
| 1997 | 342,089 | 373,621 | 1,053,232 | 8,066,926 | 661,116 | 118,428 | 64,050 | 235,430 | 10,914,892 |
| 1998 | 143,404 | 352,468 | 1,126,058 | 6,730,181 | 387,427 | 170,528 | 64,953 | 234,360 | 9,209,379 |
| 1999 | 357,261 | 618,676 | 1,209,572 | 5,881,671 | 442,185 | 54,761 | 104,438 | 403,982 | 9,072,546 |
| 2000 | 1,023,442 | 497,491 | 2,674,880 | 5,486,159 | 391,056 | 32,332 | 128,922 | 455,870 | 10,690,152 |
| 2001 | 1,177,813 | 278,907 | 1,319,928 | 9,335,313 | 635,552 | 19,802 | 21,503 | 426,264 | 13,215,082 |
| 2002 | 253,472 | 207,344 | 1,223,385 | 9,129,060 | 408,944 | 66,409 | 36,497 | 177,751 | 11,502,862 |
| 2003 | 692,391 | 238,617 | 1,619,766 | 6,695,192 | 490,399 | 198,339 | 248,853 | 165,459 | 10,349,016 |
| 2004 | 855,927 | 306,801 | 896,855 | 8,259,608 | 511,418 | 171,544 | 38,599 | 415,570 | 11,456,322 |
| 2005 | 1,227,349 | 391,456 | 1,921,122 | 7,657,147 | 326,777 | 143,387 | 39,561 | 302,784 | 12,009,583 |
| 2006 | 511,220 | 419,010 | 2,538,525 | 7,221,148 | 556,024 | 58,500 | 34,081 | 172,586 | 11,511,094 |
| 2007 | 406,238 | 272,092 | 2,130,970 | 6,944,886 | 461,162 | 38,147 | 45,068 | 310,130 | 10,608,693 |
| 2008 | 600,975 | 198,531 | 2,747,160 | 8,388,497 | 317,940 | 65,853 | 38,246 | 449,054 | 12,806,256 |
| 2009 | 193,464 | 319,734 | 2,473,018 | 5,327,388 | 368,990 | 238,900 | 82,269 | 438,209 | 9,441,972 |
| 2010 | 63,027 | 46,152 | 2,147,825 | 4,743,697 | 478,156 | 46,464 | 35,635 | 132,664 | 7,693,620 |
| 2011 | 40,855 | 45,523 | 919,922 | 3,305,707 | 246,676 | 349,463 | 44,044 | 476,292 | 5,428,482 |
| 2012 | 266,832 | 72,284 | 2,710,294 | 3,445,232 | 288,813 | 27,873 | 38,402 | 589,642 | 7,439,372 |
| 2013 | 889,754 | 197,401 | 4,076,910 | 4,273,744 | 411,882 | 106,938 | 54,915 | 411,858 | 10,423,402 |
| 2014 | 263,734 | 366,608 | 2,226,095 | 3,429,768 | 541,657 | 149,890 | 64,138 | 298,322 | 7,340,212 |
| 2015 | 116,109 | 139,031 | 1,441,241 | 3,342,008 | 471,869 | 216,168 | 111,344 | 456,802 | 6,294,572 |
| 2016 | 4,277 | 5,057 | 432,683 | 3,044,851 | 368,203 | 48,537 | 54,211 | 563,174 | 4,520,993 |

Table 5. Recreational releases (number) of Atlantic croaker by state, 1981-2015

(Source: personal communication with NMFS Fisheries Statistics Division. [07/18/2017])

| Year | NJ | DE | MD | VA | NC | SC | GA | FL | Total |
|------|-----------|-----------|-----------|-----------|-----------|---------|---------|-----------|------------|
| 1981 | | | 16,233 | 324,238 | 704,259 | 128,192 | 13,481 | 85,740 | 1,272,143 |
| 1982 | | | | 77,756 | 641,327 | 107,340 | 111,630 | 188,277 | 1,126,330 |
| 1983 | | | 1,507,184 | 1,410,151 | 424,562 | 119,036 | 70,499 | 379,021 | 3,910,453 |
| 1984 | | | 70,192 | 673,080 | 1,701,418 | 746,905 | 37,573 | 236,432 | 3,465,600 |
| 1985 | | | 13,132 | 1,616,052 | 1,596,901 | 238,678 | 66,649 | 1,146,582 | 4,677,994 |
| 1986 | | 1,757 | 43,399 | 2,578,268 | 137,841 | 84,335 | 40,623 | 318,511 | 3,204,734 |
| 1987 | 1,374 | 861 | 32,074 | 2,056,580 | 560,853 | 108,366 | 76,908 | 1,770,697 | 4,607,713 |
| 1988 | | 582 | 273,231 | 832,284 | 984,219 | 112,271 | 20,021 | 200,630 | 2,423,238 |
| 1989 | | 1,307 | 41,822 | 1,342,169 | 891,926 | 58,642 | 17,632 | 72,822 | 2,426,320 |
| 1990 | | 1,268 | 88,688 | 3,922,564 | 1,351,152 | 111,085 | 317,497 | 168,144 | 5,960,398 |
| 1991 | 91,633 | 75,319 | 3,352,190 | 7,418,045 | 669,385 | 25,168 | 140,402 | 647,824 | 12,419,966 |
| 1992 | 4,103 | 43,583 | 856,292 | 4,167,137 | 954,494 | 26,729 | 178,267 | 251,343 | 6,481,948 |
| 1993 | 5,799 | 13,194 | 2,504,362 | 5,795,479 | 1,499,217 | 16,949 | 83,203 | 138,875 | 10,057,078 |
| 1994 | 17,253 | 14,069 | 1,628,824 | 7,676,780 | 3,110,528 | 141,513 | 99,026 | 331,736 | 13,019,729 |
| 1995 | 31,019 | 51,574 | 496,046 | 5,494,289 | 1,172,716 | 108,345 | 89,609 | 141,732 | 7,585,330 |
| 1996 | 17,585 | 76,851 | 403,776 | 5,151,206 | 1,218,799 | 64,494 | 60,282 | 126,300 | 7,119,293 |
| 1997 | 111,468 | 384,233 | 1,497,670 | 7,275,160 | 1,443,568 | 138,107 | 25,630 | 116,276 | 10,992,112 |
| 1998 | 221,324 | 839,932 | 3,021,780 | 4,990,541 | 1,060,928 | 266,068 | 159,928 | 152,744 | 10,713,245 |
| 1999 | 860,325 | 1,017,499 | 2,483,800 | 5,668,925 | 1,368,478 | 116,826 | 57,567 | 967,894 | 12,541,314 |
| 2000 | 688,746 | 694,813 | 4,967,856 | 7,811,048 | 1,569,385 | 96,402 | 169,903 | 428,131 | 16,426,284 |
| 2001 | 853,621 | 285,123 | 1,585,806 | 7,086,706 | 1,256,807 | 115,284 | 192,362 | 282,461 | 11,658,170 |
| 2002 | 369,003 | 361,355 | 2,523,276 | 7,107,656 | 925,806 | 92,498 | 194,474 | 217,054 | 11,791,122 |
| 2003 | 833,508 | 654,697 | 1,393,224 | 6,543,524 | 1,552,315 | 440,446 | 965,496 | 192,356 | 12,575,566 |
| 2004 | 1,237,163 | 599,207 | 854,132 | 6,276,767 | 1,656,049 | 320,788 | 154,259 | 253,951 | 11,352,316 |
| 2005 | 1,692,401 | 674,684 | 1,136,846 | 8,738,109 | 1,401,413 | 321,861 | 280,889 | 293,692 | 14,539,895 |
| 2006 | 503,491 | 937,193 | 1,783,557 | 4,193,675 | 2,578,819 | 595,075 | 283,851 | 187,562 | 11,063,223 |
| 2007 | 590,078 | 672,771 | 1,258,131 | 8,504,212 | 1,608,120 | 224,454 | 228,564 | 321,559 | 13,407,889 |
| 2008 | 2,373,945 | 601,994 | 2,427,219 | 7,806,627 | 1,419,019 | 205,373 | 293,926 | 596,450 | 15,724,553 |
| 2009 | 108,371 | 537,587 | 1,137,578 | 7,621,484 | 1,912,670 | 514,839 | 434,608 | 406,822 | 12,673,959 |
| 2010 | 167,191 | 228,936 | 1,011,236 | 4,824,151 | 1,598,139 | 187,184 | 263,987 | 188,637 | 8,469,461 |
| 2011 | 62,391 | 88,524 | 365,716 | 4,872,928 | 1,798,230 | 240,605 | 262,493 | 452,669 | 8,143,556 |
| 2012 | 1,151,045 | 446,879 | 1,731,079 | 5,091,063 | 1,255,216 | 271,321 | 167,488 | 641,570 | 10,755,661 |
| 2013 | 773,763 | 770,454 | 2,936,927 | 5,968,340 | 1,984,701 | 799,982 | 298,409 | 318,139 | 13,850,715 |
| 2014 | 205,601 | 664,648 | 1,146,192 | 3,606,078 | 2,713,787 | 780,171 | 470,751 | 393,360 | 9,980,588 |
| 2015 | 78,135 | 118,565 | 626,529 | 2,760,541 | 2,477,625 | 959,887 | 210,454 | 422,164 | 7,653,900 |
| 2016 | 41,595 | 169,076 | 245,155 | 2,543,800 | 2,147,160 | 976,768 | 152,037 | 652,440 | 6,928,031 |

ACCSP Recreational Implementation Plan

| | |
|------------------------------------------------------|--------------------------------|
| Approval by Recreational Technical Committee: | July 12 2017 |
| Approval by Operations Committee: | July 19 2017 |
| Approval by ACCSP Coordinating Council: | August 1 2017 (planned) |
| Submit to MRIP Operations Team: | August 2017 (planned) |



Atlantic Coast MRIP Implementation Plan – 2017-2022

The Atlantic Coastal Cooperative Statistics Program (ACCSP) is a state-federal cooperative program to collect, manage, and disseminate statistical data and information on the marine and estuarine commercial and recreational fisheries of the Atlantic coast. The ACCSP has provided coordination and data collection standards for recreational data collection efforts from Maine to Florida since 2004, and has been identified as an appropriate group to develop a regional implementation plan for the Marine Recreational Information Program (MRIP) of NOAA Fisheries. The MRIP was developed in 2008 out of the need to modify survey methods for collecting saltwater recreational fishery data for estimating fishery catch and effort for use by stock assessment scientists and marine fishery managers. These improvements to the quality and coverage of recreational data collections were initiated following a critical review of then-current survey methods by the National Resource Council (NRC) in 2006. As the MRIP evolved, ACCSP members have played a more active role in assisting with these improvements, including active roles in MRIP pilot research projects to test new data collection techniques. In 2016 the MRIP Access Point Angler Intercept Survey (APAIS) transitioned to Atlantic state conduct of field data collection with central administration, coordination, and data processing for Maine through Georgia provided by ACCSP staff. The survey on the Atlantic coast of Florida is also conducted by the state, but is coordinated along with the Gulf of Mexico coast by the Gulf States Marine Fisheries Commission (GSMFC). As the MRIP continues the transition from research and development of new data collection methodologies to implementation of new surveys, the ACCSP’s Recreational Technical Committee (RTC) of state, council, Commission, and federal partners has developed this implementation plan in response to regional needs on the Atlantic coast. This plan will guide MRIP in allocating resources to further improve its program to best address the data needs of fishery assessors and managers in the Atlantic Coast region.

Baseline Assessment of Current Regional Data Collection Programs and Data Needs

MRIP General Survey

The MRIP is a data collection program that uses several regionally designed sampling surveys to collect representative data and produce statistically robust estimates of recreational fishing effort and catches. Complementary surveys covering recreational fishing for finfish in marine and estuarine waters by shore and private boat anglers comprise the general survey design of the Atlantic Coast MRIP. In 2017, the Coastal Household Telephone Survey (CHTS) provides data to produce angler effort estimates (trips per angler) and the Access Point Angler Intercept Survey (APAIS) provides individual angler catch data to produce average catch rates

by anglers. The two survey products are used to produce total catch and effort estimates by shore and private boat anglers. This general survey design is currently conducted through a combination of the ACCSP, GSMFC, Atlantic States, and federal contractors in Maine through Florida.

The main products of the MRIP general survey are bi-monthly catch estimates of all species encountered in the APAIS by state. Precise annual estimates of landings and discards are adequate for stock assessments of managed species for commonly encountered fishes. However, annual estimates at state and regional levels may lack adequate precision for species that are rarely intercepted in a general survey. For example, deep water fishing trips that target less common fish, such as tilefish offshore of southeastern states, are rarely intercepted by the APAIS, so precise, consistently accurate catch estimates may not be available over a long time series. These bi-monthly and annual catch estimates may not be timely nor precise enough for monitoring and management of recreational fisheries with Annual Catch Limits (ACLs). Bi-monthly estimates may be used to predict whether an ACL will be met before the end of a fishing year, and fisheries are often closed in-season to prevent overages. Although the MRIP surveys are not intended or designed to provide in-season quota monitoring, more precise estimates on a shorter time scale (both sampling and production of estimates from data) would provide higher certainty in managing fisheries with established ACLs.

For-Hire Recreational Fishing Components of Atlantic MRIP

The APAIS is primarily a dockside survey of anglers fishing from shore, a private boat (including rental boats), or from for-hire charter boats. Dockside surveys of anglers fishing on headboats (also called party boats) along the Atlantic Coast are not conducted. The Atlantic APAIS includes at-sea headboat angler intercept sampling to obtain the standard APAIS angler interview data as well as detailed discarded fish data. The APAIS interviewer rides the headboat, observes anglers while they are fishing, and identifies, counts, and measures those fish to be discarded. This protocol was adopted on the Atlantic Coast in 2005 following a year of preliminary testing and a pilot study in South Carolina.

Both sectors of the for-hire recreational fishery, charter and headboats, have angler effort estimates produced from a list-directed weekly telephone survey of the for-hire vessel operators, the For-Hire Telephone Survey (FHTS). This telephone survey replaced the CHTS for these sectors in 2005 and provides precise estimates of angler-effort by the same bi-monthly sampling periods, by state. In the Southeastern States (NC to FL), the headboat sector FHTS is replaced by a special survey program of NOAA Fisheries, the Southeast Regional Headboat Survey (SRHS). The SRHS utilizes a census logbook reporting method to produce bimonthly estimates of catch and effort from this portion of the For-Hire fishing fleet.

MRIP General Survey Components – Issues for Future Attention

1. APAIS: coverage of For-Hire Fishing sector: Charter and Headboats

Current APAIS sampling levels are adequate to produce precise annual regional catch estimates of many state managed species based on recommended levels of precision identified as standards by the ACCSP. For specific state fisheries, some states conduct additional assignments not funded through the MRIP to reduce variances of the catch estimates (as measured by Percent Standard Error or PSE), including Massachusetts, Rhode Island, Delaware, Virginia, and North Carolina. The ACCSP has also funded additional headboat at-sea observer assignments from New Hampshire to Florida since 2005. Increases in general APAIS sampling levels would produce more precise catch estimates of all species, but are resource limited (funds and available field staff).

A priority identified by the ACCSP is improved recreational discard data collection efforts. Currently in the APAIS dockside sampled modes, catch per unit effort (CPUE) information for discarded catch is based on angler recall of the number of each species released by each angler intercepted, and the accuracy of that recall at the dock is unknown. Furthermore, dockside intercept surveys are inadequate for collecting information about the size and condition of fish released at sea, which are critical data needs for stock assessments. MRIP APAIS protocols for at-sea sampling is adequate for headboats but, due to small fleets and higher costs, the number and variety of vessels eligible for at-sea observations of discards is small. MRIP APAIS protocols do not allow for at-sea sampling observations from charter and private boats. Without adequate data from those sectors on areas and depths fished, it is unknown whether the length frequency of discards observed from headboats is representative of the entire recreational boat fishery.

2. MRIP Coastal Household Telephone Survey (CHTS)/Fishing Effort Survey (FES)

Fishing effort data for shore mode and private boat mode angling has historically been collected through the Coastal Household Telephone Survey (CHTS). Since the majority of shore and private boat trips are taken by anglers who reside in coastal areas, the CHTS is limited to households in coastal counties. This survey is conducted from Maine to Florida. The CHTS estimates the average number of trips per household in each coastal county and then expands by the county household population to estimate total angler trips. County estimates are summed to produce state-level effort estimates. In recent years MRIP has been testing alternate methods for collecting these effort data. It was determined that the CHTS was potentially biased and inefficient due to low response rates and response bias. Other than Florida, for which all counties are considered coastal, the survey has no method for contacting anglers that live inland of coastal counties. Additionally, with more people abandoning landlines for cellphones, a growing number of potential respondents have become unreachable. For this reason MRIP is transitioning to the extensively tested Fishing Effort Survey (FES). The FES is a mail survey that utilizes state recreational saltwater fishing license databases to target licensed anglers and the U.S. Postal Service address database to distribute surveys to unlicensed anglers. MRIP is currently in the benchmarking and calibration phase with full implementation (and

discontinuation of the CHTS) expected in 2018. MRIP is also testing the feasibility of using a one-month recall period within FES for producing monthly effort estimates. If successful this would help in addressing the priority of more timely catch and effort estimates to better address current fishery management needs.

3. MRIP For-Hire Telephone Survey (FHTS)

The FHTS replaced the CHTS of the MRIP general survey and focuses specifically on estimating the numbers of angler trips in the charter boat and headboat fishing modes. The FHTS was implemented because a large proportion of for-hire recreational anglers did not reside in coastal counties sampled by the CHTS. The FHTS has resulted in improved effort estimates for charter and headboat modes of fishing, which has improved overall precision of catch estimates for the charter fleet (federally permitted vessels, inshore guide boats and vessels that operate in state waters only). However, non-response rates in the FHTS have steadily increased over time, and mandatory vessel trip reports (VTRs) in the North Atlantic are used for the effort component of the final MRIP estimates at the end of the year for the part of the fleet that reports via VTRs. The time lag of annual inclusion due to data availability contributes to potentially inaccurate preliminary for-hire catch estimates for some species. Non-response in the FHTS is also an issue, for example in Southeast Florida, where non-response rates are as high as 60%.

The current operational approach to collecting the FHTS utilizes a central contractor to maintain the vessel directory, perform the sampling draw, and complete the telephone calls in ten states, while three states utilize state staff to perform the calls and maintain the state vessel directories. States that conduct the FHTS report improved survey response rates, communication with captains, and vessel sampling frame maintenance. NOAA Fisheries is developing an online vessel directory to improve sampling frame maintenance for the FHTS.

For-hire vessels may be managed as a distinct sector with their own allocation. The current FHTS survey methodology does not meet new data monitoring needs for desired sector management options. Tracking ACLs requires timely and precise data and an ability to monitor catch at the individual vessel level. For this reason the ACCSP has identified increased timeliness of catch and effort estimates as a high priority. Electronic logbooks have the capability to produce more timely catch and effort data with dockside validation. Both the Mid and South Atlantic Fishery Management Councils are testing and/or implementing mandatory electronic logbook reporting options for federally permitted charter and headboat vessels. Both Councils are planning for 2018 implementation of these mandatory census logbook programs. These changes will increase the overlap with the current FHTS. Modifications to the FHTS may be necessary to reduce reporting burden in overlapping data collection programs.

Special Surveys and Data Collection Programs

Highly Migratory Species

Highly Migratory Species (HMS) are federally managed billfish, tuna, and sharks that range along the entire Atlantic and Gulf of Mexico regions. There are approximately 31,000 valid HMS permits, including 25,000 recreational angling permits, 3,000 charter and headboat permits and 3,000 general category permits coastwide. Because these species range across

regional boundaries and are directly managed by NOAA Fisheries in US waters, the MRIP implementation priorities are being developed separately from the Atlantic, Gulf of Mexico, and Caribbean Implementation Plans by an ad-hoc HMS Implementation Plan Team (includes representatives from ACCSP, Massachusetts, and North Carolina). ACCSP supports continued development of HMS Priorities through the ad-hoc team. A brief summary of the HMS-targeted data collection programs along the Atlantic Coast is provided below.

MRIP Large Pelagic Survey (Large Pelagic Intercept Survey, Telephone Survey, Biological Survey)

The NOAA Fisheries Large Pelagic Survey (LPS) began in 1992 as a specialized survey program of rare event HMS species in support of domestic management and international treaties. The LPS includes several surveys: a targeted angler intercept survey, the Large Pelagic Intercept Survey, which is similar to the APAIS but only intercepts recreational and for-hire fishing trips that targeted HMS species; the Large Pelagic Telephone Survey, which is a list-frame sampling survey to produce angler effort estimates in the HMS/LPS fisheries; and the Large Pelagic Biological Survey, used to obtain biological samples for life-history parameter estimation, such as age, size, and sex distribution, as well as reproduction parameters. The survey collects information to identify fishing effort and catch (harvest and discard) from vessels holding HMS Permits. In the LPS region (ME-VA) there were 11,684 recreational angling, 2,157 charter and headboat, and 2,161 general category permit holders in 2016.

HMS Catch Card Census – Maryland and North Carolina

Highly Migratory Species Catch Card Census programs began in 1998 for reporting compliance (mandatory for for-hire license or HMS fishing permits), and to identify catch (harvest and discard). Two states have chosen to implement these census programs and are essentially the same in each state. The programs include private anglers as well as for-hire headboat and charter boat operators from Maryland and North Carolina holding a HMS Charter/headboat permit. All recreationally landed HMS must be reported via a catch card, regardless of waters fished (state or federal).

Recreational Bluefin Tuna Landings

The Recreational Bluefin Tuna Landings program is used to identify harvest and dead discards. This program operates from Maine through Texas and the Caribbean territories, covering private anglers as well as for-hire headboats and charter vessels holding Atlantic HMS permits for fishing in federal waters.

For-Hire Logbook Programs

The following items provide some additional information on ongoing for-hire data collection programs on the Atlantic Coast associated with logbook reporting requirements.

These data collection programs utilize logbooks for reporting details of individual recreational fishing trips in the For-Hire fishery on the Atlantic Coast. Federally required (mandatory) reporting is linked to specific FMPs and permits to participate in the specific fisheries, e.g. groundfish through the Greater Atlantic Regional Fisheries Office (GARFO). Individual state logbook reporting programs may be comprehensive in scope or limited to fishery-specific data collections.

GARFO Vessel Trip Reporting For-Hire Logbooks

Commercial and for-hire operators participating in New England and Mid-Atlantic fishery management plans (FMPs) are required to report results of all fishing trips via the Vessel Trip Report (VTR), a mandatory trip-reporting logbook data collection program administered by NOAA GARFO. The for-hire fleet is approximately 900 permitted vessels operating from Maine to North Carolina. Trip reports are required to be submitted weekly for the majority of the fleet (vessels with Northeast multispecies permits are required to submit weekly reports and comprise approximately 75% of the for-hire fleet). Historically the VTR data was not used for preliminary bi-monthly MRIP effort estimates but has been incorporated into the final estimated effort, by wave, after year-end. Beginning in 2017 the VTR logbook data has been incorporated into preliminary MRIP bi-monthly effort estimates, and by extension, the catch estimates.

Southeast Region Headboat Survey

The Southeast Region Headboat Survey (SRHS) (NOAA Southeast Fisheries Science Center, Beaufort Laboratory) was implemented in the South Atlantic in 1972 and extends from North Carolina through east Florida. The survey focuses on producing landings and effort estimates from the federally permitted headboat fishery targeting offshore reef fishes. This data collection program includes mandatory electronic trip reporting by selected headboats on a weekly basis, as well as a dockside intercept program to validate reporting and obtain biological samples for age, growth and reproductive parameters used in stock assessments. Federal regulations require only federally permitted boats to report to the SRHS: headboats without federal permits are not included. If headboats that do not possess a federal permit are also not included in the MRIP FHTS a gap in coverage may result.

The MRIP APAIS headboat at-sea sampling component is conducted in the same region as covered by the SRHS although MRIP does not produce landings estimates for use by stock assessment or management for this fishery sector. The primary objective of the MRIP APAIS headboat sampling in the Southeast Region is to obtain data on live discard size and species composition from observed fishing, rather than species composition and number from logbook reported data with no information available on size or condition of discards. These two data collection programs overlap but the trip reporting in logbooks and voluntary participation in the MRIP at-sea APAIS sampling does not constitute duplicative reporting burden.

Maryland Charter Fisheries Logbook

The Maryland DNR charter logbook began in 1995 as a mandatory weekly reporting program for charter boats fishing for striped bass in Chesapeake Bay only. This program was modified to include reporting by vessels and/or captains holding several recreational fishery permits in MD: The Chesapeake Bay & Coastal Sport Charter Boat License, the Maryland Commercial Fishing Guide License, and/or the Maryland Unlimited Tidal Fish License. These permits and reporting requirements cover all species in the Chesapeake Bay and coastal Maryland waters. This program collects variables to determine fishing effort, and harvest, including weights from landed fish and catch disposition (e.g., released, landed, kept, regulatory release, etc.). Vessel operators are required to submit trip level reports on a weekly basis.

Maryland DNR provides the trip data to MRIP for those vessels selected in the MRIP FHTS to be used for effort estimation in lieu of telephone survey responses by Maryland vessel operators (who are not called by the FHTS). The Maryland ocean-side for-hire vessel operators holding a federal for-hire vessel permit are required to submit VTRs to NOAA as well as the state reporting requirements. Hence, there is the likelihood of duplicative reporting by Maryland for-hire vessels fishing in coastal Atlantic waters.

Other State For-Hire logbook programs

The following state logbook programs cover for-hire vessels in varying scope of vessels and fisheries in paper or electronic reporting forms. The full descriptions are included in the ACCSP For-Hire Inventory report (2016). They are referenced here as areas for future coordination and possible integration if later certified by MRIP. Currently (2017) none of these are used in MRIP estimation:

- Rhode Island DFW via SAFIS eTRIPS and eLogbook
- Connecticut Party and Charter Vessel Black Sea Bass Program
- New York State Vessel Trip Reports via SAFIS eTRIPS
- New Jersey Striped Bass Bonus Program
- Virginia Cobia, Tilefish, and Grouper Permit Reporting Program (for-hire & private anglers)
- South Carolina For-Hire Logbook

Other Recreational Data Collection Programs

South Atlantic Red Snapper Mini-Seasons

Since 2010, recreational seasons for red snapper in the South Atlantic have ranged from 0 to 8 days. During years when a short mini-season is allowed, the states have worked to monitor this pulse fishery and if possible, provide alternative landings estimates. During some years, no red snapper trips were intercepted in the MRIP survey in some states or modes, and supplementary state data collections have been used as the “best available data” in stock assessments and for tracking the Annual Catch Limit. In Florida, where the majority of private boat effort and harvest for red snapper occurs, the state has dedicated significant resources

towards the development of a specialized survey to more precisely estimate effort and landings during these short seasons. In other areas where fishing effort is less concentrated and trips are more difficult to intercept, states have struggled to meet this data need with their limited resources. Methods employed have largely relied on voluntary donations of carcasses and other opportunistic sampling methods. For the for-hire fishery, states have increased coverage in the FHTS during weeks when the season was open and captains were also asked to report red snapper landings over the phone; however, no field validation of self-reported landings was conducted.

Marine Fisheries Initiative (MARFIN) Charter Fishery Observer Pilot Study in Florida

From 2013 to 2015, the State of Florida pilot tested a voluntary charter fishery observer program on the east coast of Florida, including the Keys. The objective of the study was to test the feasibility of working cooperatively with for-hire charter operators to place fishery observers on vessels with their paying clients to collect detailed data on the areas fished and the species composition, size distribution and conditions of capture and release for regulatory discards. Over the course of the study, Fish and Wildlife Commission (FWC) biologists worked cooperatively with charter vessels and clients to observe recreational fishing activity. This study provided detailed area fished, size and release condition of discards, and age composition data for harvested fish that are not provided through the MRIP APAIS. Data from this study has already contributed to multiple stock assessments in the South Atlantic Region, including for red snapper, red grouper, black sea bass, and gray triggerfish.

Marine Fisheries Initiative (MARFIN) Dockside Biological Sampling Pilot Study in Florida

The Florida Fish and Wildlife Commission began a project in 2017 to develop and pilot test methods to collect representative biological samples (length, weight, age, sex) from federally managed finfish species in the South Atlantic that are harvested from private recreational boats and charter boats. The goal of this project is to develop statistically sound methods for obtaining representative biological samples from the recreational fishery to supplement the MRIP APAIS.

Atlantic Regional Implementation Priorities to Meet Data Needs

The ACCSP Recreational Technical Committee developed a prioritized list of regionally important data needs, which were reviewed and approved by the ACCSP Coordinating Council.

- 1. Improve precision (PSE) of MRIP catch estimates**
- 2. Comprehensive for-hire data collection and monitoring
Improved recreational fishery discard and release data**
- 4. Biological sampling for recreational fisheries separate from MRIP APAIS**
- 5. Improved spatial resolution and technical guidance for post-stratification of MRIP estimates**
- 6. Improved timeliness of recreational catch and harvest estimates**

Each priority is described below in more detail to provide justification for the regional importance along with the approach for implementation and where possible, the estimated annual costs. Some priorities have associated MRIP-certified methodologies and some are included for purposes of discussion and future research. ACCSP will continue to update this plan as new methods are certified or as regional priorities change. There may be a need to balance priorities with costs and therefore to address issues in a different order. Costs of implementation may come in a form of tradeoffs other than dollars. For example, at current sample sizes, implementing monthly estimates would lead to lower precision at the monthly level, or need higher spending to increase sample size and maintain precision.

Improve Precision of Catch Estimates (Landings and Discards)

The ACCSP held a workshop during 2014 to evaluate the effects of high PSE values on the stability of stock assessment outputs. In general, model estimates were considered reliable if PSE's for recreational catch statistics were at least below the 40% to 60% range, and under certain circumstances PSE's higher than 60% may be acceptable (for example, if the species is short-lived or recreational landings are a small component of total removals). For many managed species on the Atlantic coast, MRIP estimates are reasonably precise at the annual and regional scale for interjurisdictional stock assessments. Inshore species that are frequently encountered in the MRIP APAIS survey also have reasonably precise state-level estimates for use in single jurisdiction assessments. For long-lived species and/or species with high proportional removals attributed to the recreational fishery, PSEs below a maximum of 60% and preferably below 40% should be achieved at the necessary scale for assessment.

However, current estimates are not precise enough to meet fisheries management needs for some species. [Note: Readers are reminded that PSEs are a relative measure of precision. PSEs can be used to approximate a confidence interval by doubling the PSE...for example a PSE of 40% means we are 95% sure the real answer is within about $\pm 80\%$ of the estimated value.] There are many examples where precision is required at wave level or less than an annual time scale. Stock assessments may partition fishery removals into seasons or redefine calendar years into fishing years. Fishery managers also require precise estimates of landings and discards over time periods that better match the scale of the recreational fishery. For example, for federally

managed species with an annual catch limit (ACL) that cannot be exceeded, recreational fisheries have demonstrated the capacity to exceed limits well before the end of a full year. Thus, annual seasons have been reduced and precise estimates are now needed over much shorter periods (in some cases weeks or days) to ensure that ACLs are not exceeded and overfishing is not occurring. As such, the traditional view of an annual regional target PSE has changed, and increasing precision of estimates within waves may be necessary for species where the unit of analysis has a temporal scale less than a year.

An additional issue that has arisen in recent years is that MRIP estimates must be calibrated to account for the multiple design and estimation changes over the time series. These calculations propagate error that increases the PSE around final estimates for landings and discards. Furthermore, PSEs around MRIP estimates still remain high before calibration for pulse fisheries (such as cobia, tuna, and billfish that migrate seasonally through southern and mid-Atlantic states, fisheries with short seasons (such as red snapper that is managed with a 0-8 day harvest season in the South Atlantic), species with localized distributions (such as black grouper in south Florida), or species that are otherwise caught infrequently, if at all (such as HMS and deep water species).

Several priorities within this document have the potential to affect PSE. For example, a move to monthly estimates without a significant increase in APAIS sample sizes could increase PSE. Redefining sample strata spatiotemporally to better focus on species poorly represented using the existing survey methods would result in decreased PSE for rare event (e.g. blueline tilefish, red snapper, etc.) and pulse fisheries (e.g. cobia, tuna, and billfish). Specialized surveys should also be considered, designed, and certified to address these particularly problematic species. For example, alternative catch and effort surveys are necessary to track the ACL for red snapper over the harvest season that occurs over a period of days, and LPS and HMS catch card programs are an alternative method implemented to address low precision estimates for billfish and tuna. Methods should be developed to collect data from private anglers on species not sufficiently encountered by APAIS to develop precise-enough estimates through other means. As the need for reliable estimates increase for species managed under quotas, alternative survey methods should be developed for MRIP certification with a regional framework that is scalable across these pulse and rare event species.

Managed species with chronically high PSEs and/or very small ACLs should be prioritized for improvements. Historically, attempts to reduce PSE have primarily focused on increasing sample size; however, ACCSP recommends that future resources be focused on investigating targeted sampling design changes, alternative estimation approaches, and methods to optimize sampling effort (with strategic allocation of samples at existing or increased levels) to reduce PSEs to acceptable levels.

Comprehensive For-Hire Data Collection and Monitoring

Current for-hire catch and effort estimates combine distinct data collection methodologies for effort (FHTS) and catch (APAIS) with a validation component. This provides adequate

coverage for commonly encountered species on an annual basis. However, FHTS and APAIS overlap with other mandatory reporting requirements vary by jurisdiction, such as federal Northeast VTR's, SRHS, and state logbook programs. These data streams are not fully integrated into MRIP estimates (preliminary and/or final). The current system has been criticized for increased reporting burden on captains, lack of integration of data collection to produce catch statistics, and under coverage of pulse fisheries and deep-water species.

Tracking ACLs requires more timely and precise data and an ability to monitor catch. Therefore the ACCSP has identified increased timeliness of catch and effort statistics as a high priority. Electronic logbooks can produce more timely catch and effort data, including more information on deep water species and pulse fisheries while streamlining the reporting mechanism. Census reporting of for-hire fisheries has been recommended before, including the 2006 NRC review of MRIP and the 2012 ACCSP Data Collection Standards, and through a MRIP supported pilot research project in the Gulf of Mexico.

Recent changes in fishery management practices have further strengthened the argument for the use of logbooks in the for-hire sector. The Mid-Atlantic Fishery Management Council (MAFMC) and the South Atlantic Fishery Management Council (SAFMC) are developing and/or implementing mandatory electronic for-hire reporting requirements to improve reporting. Recommended changes for federally permitted charter vessels will likely require submitting fishing records via electronic logbooks within 48 hours of a fishing trip (MAFMC) or within 7 days of a fishing trip (i.e. weekly; SAFMC). The Northeast VTR program is currently mandatory (weekly) with an electronic submission option. These actions are moving towards logbook data collection to monitor both catch and effort data within the federally permitted for-hire sector.

ACCSP supports development of MRIP certified logbook programs with validation as one method to monitor catch and effort in the for-hire fishery. The ACCSP is involved in several pilot projects testing electronic logbook data collection and validation using an angler intercept interview, and six states have for-hire logbook reporting programs in place. Logbook compliance with reporting requirements depends on effective outreach and enforcement mechanisms. However, logbook programs may not always be practicable, due to legislative or regulatory hurdles, or may not be preferred by fishery agency managers, necessitating reliance on statistically-valid surveys. The critical need along the Atlantic coast is to eliminate duplicative, often overlapping, for-hire fishery reporting programs (most are mandatory and some are voluntary). A comprehensive program, with full, but not duplicative coverage of both federally and the many non-federally permitted boats needs to be implemented. Non-federally permitted boats includes vessels that fish exclusively in state waters or for fishes not currently regulated via permits that have reporting requirements.

To meet future data collection and fishery monitoring needs, data collection must be timely, precise, cost effective, and minimize the reporting burden on captains and fishermen. The ACCSP recommends a comprehensive data collection program be developed for the for-hire fisheries to ensure minimal reporting burden and leverage data sharing among federal and state programs. Coverage shall include headboats and charter boats fishing in both state and federal

waters, and methods may include logbooks where feasible, and alternative approaches to data collections for fishery monitoring where logbooks are not feasible or practicable. The implemented program should follow MRIP certified designs for logbooks with validation or sampling surveys.

Recognizing various federal logbooks are in development or being modified for 2018 implementation, the Atlantic region needs completion and certification of a method to validate logbooks and develop correction factors to utilize logbook effort and catch in MRIP estimates by 2020. Further, the ACCSP and Atlantic states will work with NOAA Fisheries to develop a comprehensive integrated for-hire data collection program for peer review and certification by 2022. The new program shall meet the needs of statistical estimation, stock assessment, and fisheries management.

Improved Recreational Discard/Release Data

In response to stock declines, fishery managers have taken regulatory steps to reduce harvest in the recreational sector, including increased size limits, reduced bag limits, and reduced recreational fishing seasons to ensure harvest levels do not exceed management targets. This has translated into a growing portion of recreational catch that is released at sea and unavailable for direct observation in dockside surveys. Numbers of discarded fish and accurate species identification of discarded fishes are more difficult to obtain with precision than harvested catch, due largely to the fact that current methods rely on angler recall some length of time after the trip has occurred.

Proper identification of discarded species is a requirement for any type of estimation of released fish. Several studies have shown anglers have varying ability to identify their catch, including a recent study on the West Coast that demonstrated anglers could reliably recognize halibut and sand bass (unique body morphs without similar conspecifics) but had difficulty with rockfishes (many species very similar in appearance). The Atlantic coast region has similar species identification issues with flounders, kingfishes, sharks, and reef fishes. Lack of angler expertise in proper identification of species requires they be reported at family or genus level groups. These grouped discarded species must be delineated into their constituent species prior to stock assessment to provide accurate and complete counts of all discards of a particular species. There is no standard method and little supplementary information to aid in these delineations. Given the regulatory status and differential stock health within these species groupings, accurate identification is paramount for holistic management. Supplemental surveys to ascertain the makeup of species within these groups should not be the only method for improving discard identification. Distribution of taxonomic keys or other fish identification guides or tools for these species, and an increase in angler education and outreach about proper fish identification, should be a priority part of any improved program for discarded fish identification, enumeration, and biological data collection.

Atlantic MRIP APAIS has included a protocol specific to for-hire headboat at-sea discard monitoring and angler interviewing since 2005. In Maine through Florida, state biologists directly observed recreational anglers as they fished on headboats and collected information on the species composition, size, and release condition of discards. Based on the success of projects funded to date, the use of at-sea observers in the headboat fishery has proven to be a viable

method for collecting accurate data on discards that fills important data gaps in stock assessments. However, headboat sampling could be improved with an expanded frame of active, eligible vessels participating (currently voluntary participation within the APAIS survey), and an increased number of headboat fishing trips sampled.

The GulfFIN is planning a workshop to discuss current recreational fishery discard data collection methods, potential improvements to existing programs and development of new alternative methods for discard data collections, such as specialized surveys. ACCSP staff are on the workshop steering committee, and representatives of the ACCSP will be among workshop participants. Discussion of data standards will be included in this workshop to more effectively coordinate data programs between GulfFIN and ACCSP partners for use in coastwide assessments and to facilitate MRIP certification of new surveys.

The ACCSP supports and recommends improvements to the current headboat at-sea sampling program to include more robust sample sizes to support better precision of discard rates and composition, and improved outreach efforts to increase participation by eligible headboats throughout the Atlantic coast region. The ACCSP also supports Atlantic and Gulf coast cooperative efforts via participation in a workshop to evaluate and discuss improvements to existing discarded fish data collections as well as discussion and development of new methods, including specialized surveys independent of the MRIP APAIS survey. Following the workshop in the Gulf, the ACCSP RTC will review the report generated and recommend next steps to improve precision and accuracy of discard estimates.

Estimated cost to identify issues and new methods: The 2017 workshop is expected to be less than \$10,000. Future annual costs cannot be identified until a proposed methodology is determined.

Estimated cost to adjust base sampling: To increase headboat sampling by 100% of the Maine to Georgia historical base, plus the east coast of Florida is approximately \$200,000 per year (Sampling previously accomplished via ACCSP funded activity 2005-2017).

Biological sampling for recreational fisheries separate from MRIP APAIS

Fishery-dependent monitoring programs in the Atlantic region that collect vital statistics on catch and effort from the recreational fishery do not provide some of the critical data inputs needed for age-based stock assessments. The MRIP is the only dedicated large-scale fishery dependent program that monitors private and for-hire charter boat-based segments of the recreational fishery throughout the region. The MRIP strives to provide a statistically valid sample of the size composition and biomass of harvested finfish that is representative of the spatial and temporal distribution of the recreational fishery. However, for many important managed species, the MRIP survey intercepts low numbers of landed fish, particularly for species with strict harvest limits, such as red snapper, or that are targeted by a small subset of participants in the overall recreational fishery, such as tilefishes and deep water grouper species. Furthermore, time constraints and strict interview procedures do not allow field interviewers to collect age structures or record sex from fish sampled in the access-point intercept portion of the survey. The MRIP survey collects coarse trip-level data on the primary area fished (inland, state territorial seas up to 3 miles from shore, or federal waters greater than 3 miles from shore), but does not provide data

on the distribution of catch across latitudinal gradients, distance from shore, or depths fished. These data are needed to make inferences about fisheries selectivity and depth-dependent discard mortality for released portions of recreational catch.

Coast-wide methods to supplement data collected through the APAIS are needed to collect length, weight, age structures and sex ratios from managed species that are representative of current recreational landings. The supplemental survey should be focused on intercepting trips with catch and maximizing biological samples, whereas the APAIS would continue to be the primary data source for catch-per-unit-effort. The supplemental survey should also allow for the collection of trip-level data on area fished, depths fished, fishing methods, and characteristics of discards (numbers by species, proportions under legal size limits, immediate mortalities, and notable impairments).

Improved spatial resolution and technical guidance for post-stratification of MRIP estimates

Biological stock boundaries often do not coincide with state boundaries used to pre-stratify the MRIP APAIS and CHTS/FES (e.g., the northern and southern black sea bass stock split at Cape Hatteras, the Gulf of Maine and Georges Bank stocks of Atlantic cod, the Long Island Sound management unit of tautog, the Gulf and Atlantic stocks of many species separated at the Florida Keys). As a result, precise estimates of recreational removals for both input to stock assessments and annual quota monitoring need to be developed at a finer scale and often with different boundaries than in MRIP's pre-stratified design.

There are several approaches to resolving this issue including: (1) increase sample size to allow for more precise post-stratified estimates; (2) distribute base number of assignments to pre-stratified sub-state regions as several states currently do (e.g. NC for Cape Hatteras); and (3) further pre-stratify the survey around important biological boundaries, which may require changes to the survey sampling schedule.

Post-stratification is the simpler approach, and methods to improve precision as described in Priority 2 would also help improve the usability of finer spatial scale estimates. However, some boundaries cannot be resolved with post-stratification. For example, Monroe County (the Florida Keys) straddles two federal fishery management council jurisdictions and is a stock boundary for many assessments in the Gulf of Mexico and South Atlantic. Currently in MRIP, all effort and catch for this county is assigned to west Florida estimates regardless of waters fished. Although county-level estimates of landings and discards may be post-stratified to reassign to the Atlantic, there is often a need to develop estimates of removals from this county by area fished (Gulf and Atlantic), and this is not possible with the current MRIP design. A combination of both methods may be required to fully resolve this issue for all recreationally important species.

A related issue is the development and presentation of post-stratified estimates that have been appropriately calibrated for changes to the APAIS and implementation of the FES. Currently, MRIP offers SAS template programs to allow users to define custom domains to post-

stratify estimates along appropriate biological or management boundaries. Developing web tools to allow users to obtain custom estimates, or estimates for a standardized set of regions with standardized, pre-defined boundaries, with the appropriate calibration factors applied, would improve usability and transparency of these estimates for use in stock assessments and the management process. These could be provided to all users through the current MRIP interface, or to a subset of more advanced users through the ACCSP Data Warehouse interface.

Improved timeliness of recreational catch and harvest estimates

There are two aspects of timing to consider regarding recreational catch and harvest estimates: the unit of estimation (one month, two months, cumulative, annual) and how quickly estimates are generated after an estimation period has ended. The ACCSP recreational data collection standards, revised in 2012, include monthly catch-effort estimation. State and Commission managed species would benefit from monthly estimates to set seasons – especially in northern areas where fish may only be active during one month of the current two-month wave, or for ephemeral fisheries where a species may pass through and be available for only one month (such as cobia). This could be especially important to for-hire fishery captains as it could assist business planning. Also, having more refined temporal estimates could help reduce gaps or buffers set between ACLs and Annual Catch Targets (ACTs), allowing anglers to harvest more fish by reducing uncertainty in landings. The 2016 National Academy of Science (NAS) Review recommended additional evaluation of the cognitive properties of the 2-month recall period, and a shorter estimation period would likely reduce any recall bias. Currently, the new FES survey is being tested to determine if sufficient data are collected to produce monthly estimates. APAIS data collection is already amenable to monthly recreational estimates.

In terms of how quickly estimates are generated, currently annual estimates of catch and harvest are often not available until April of the following year, and wave estimates are not available until 45 days after the completion of a wave. Improving the timeliness of recreational catch and harvest estimates could help fishery managers better predict when seasons need to be closed before landings are exceeded. Managers would also have more time to develop management options before decisions for an upcoming season must be made if a reduction in the lag time is achieved. Electronic capture of APAIS dockside survey data would improve data turn-around and data quality.

The trade-off between the additional cost of moving to monthly waves and/or faster turn-around time for generating estimates should be evaluated against budgeting for improved precision at the current two-month/annual levels and other recreational data priorities. Moving to one-month waves without additional sampling could result in monthly estimates of sufficiently low precision that having monthly estimates does not actually improve management. The cost of moving to one-month estimates while maintaining the current precision that two-month waves achieve should be estimated, as should the degree that one-month estimates would have lower precision compared to two-month waves at current budget levels.



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: American Lobster Management Board

FROM: GOM/GBK Subcommittee

DATE: July 24, 2017

SUBJECT: Recommendations to Board Regarding Management of GOM/GBK Stock

The Gulf of Maine/Georges Bank (GOM/GBK) Subcommittee met in New Hampshire on July 13th to continue their discussion on ways to build resiliency into the GOM/GBK stock. This was the second meeting of the Subcommittee and expanded upon the preliminary recommendations discussed at their April 13th meeting. The American Lobster Management Board (Board) established the GOM/GBK Subcommittee in response to continued low settlement values in the stock. Membership on the Subcommittee includes Board members, industry organization leaders, TC members, and fishermen.

Below is a recommendation for a multi-phase approach to increase the resiliency of the GOM/GBK stock. Phase one is a proactive management response which seeks to standardize management measures in the GOM and GBK in order to build a biological buffer through the protection of spawning stock biomass. This phase would require the Board to initiate an addendum. Phase two seeks to address the fact that economic effects will likely be felt before reference points trigger management action. The Subcommittee recommends early and frequent conversations with industry members to field goals and gain consensus that waiting to trigger management action until abundance drops below the current reference points will result in substantial economic declines, particularly if fixed costs remain the same and lobster prices only marginally increase. Should the ventless trap surveys, trawl surveys, or landings show a significant decline during the development of phase one, the GOM/GBK Subcommittee will re-convene to evaluate the timing of further management action.

Need for Proactive Management Response

The American lobster fishery is one of the largest and most valuable fisheries along the Atlantic coast. In 2016, over 158 million pounds were landed totaling \$666.7 million dollars in ex-vessel value (Source: ACCSP). This was the highest ex-vessel value of any species landed along the Atlantic coast in 2016. The vast majority of landings are concentrated in the GOM/GBK stock, with 87% of lobster landed in Maine and New Hampshire. Many Massachusetts and Rhode Island fishermen also participate in the GOM/GBK fishery, adding to its significance. The concentration of lobster landings, and value, in a few states underscores the economic importance of the lobster fishery to many New England coastal communities. In Maine, total economic impact of the lobster fishery (including catch and associated dock side commerce) is

estimated at over \$1 billion¹. The lack of other economic opportunities, both in terms of species to fish and employment outside the fishing industry, compounds the economic reliance of some coastal communities on GOM/GBK lobster – particularly in Maine².

As a result, the Subcommittee is recommending a multiple phase approach to increase the resiliency of the GOM/GBK stock. This recommended action is in response to signs of reduced settlement, particularly in the young-of-year surveys, as well as the combination of the GOM and GBK stocks following the 2015 Stock Assessment.

Phase One: Standardize Management Measures in the GOM/GBK Stock

The first phase is a proactive management response which seeks to standardize management measures (including gauge sizes, v-notch requirements, etc.) and other plan provisions in the GOM/GBK stock. At their April 13th meeting, the Subcommittee discussed lessons learned from the Southern New England stock decline, including the need implement standardized regulations in order to address enforcement challenges and improve the biological impact of management tools. Accordingly, the intent of action in the GOM/GBK stock is to develop a uniform set of regulations, to the extent possible, in order to build an additional biological buffer through the protection of spawning stock biomass across management areas. Currently, disparate management measures allow for some lobsters protected in one LCMA to be harvested in another LCMA, undermining the effectiveness of the measures in place. In addition, this action addresses concerns regarding the enforcement of biological management measures in the lobster fishery, particularly rules regarding lobster chain-of-custody across state lines. The Subcommittee recommends the Board initiate an addendum to consider these management changes, thus charging the PDT with developing management alternatives which consider different sets of uniform regulations, considering the time period over which these changes occur, and starting the public-process outlined by the Commission. Development of an addendum should include analyses which estimate changes in catch number, catch weight, and spawning stock biomass as a result of standardized management measures.

Phase Two: Develop Indicators to Address Economic Concerns

The second phase seeks to address the fact that substantial economic effects will be felt before the reference points trigger management action. Management action is not required by the Board until the GOM/GBK stock falls below the abundance threshold. Given the 2015 Stock Assessment showed the stock to be at record high abundance (248 million lobsters), allowing the stock to decline to the 25th percentile (66 million lobsters) could lead to severe economic losses in many coastal communities, particularly if fixed costs remain constant and lobster prices only marginally increase. As a result, the Subcommittee recommends triggers be

¹ Gulf of Maine Research Institute (GMRI), 2014. Understanding Barriers and Opportunities to Profitability in the Maine Lobster Industry.

² GMRI, 2014; Steneck, R. S., Hughes, T. P., Cinner, J. E., Adger, W. N., Arnold, S. N., Berkes, F., Boudreau, S. A., Brown, K., Folke, C., Gunderson, L., Olsson, P., Scheffer, M., Stephenson, E., Walker, B., Wilson, J., and B. Worm. 2011. Creation of a Gilded trap by the High Economic Value of the Maine Lobster Fishery. *Conservation Biology*, 25(5):904-912.

developed which require management action at a higher abundance. The nature of the trigger (ie: whether it is based on a change in landings, value, ventless trap surveys, etc.) as well as the management response (ie: what action is taken) still needs to be developed; however, the Subcommittee recommends Board members initiate conversations with industry early in the phase two process to field potential goals and gain consensus that the current reference points will result in severe economic consequences. Given the next benchmark stock assessment is scheduled for August 2020, this may provide an opportunity for the Board, during phase two, to consider additional reference point options which better reflect the current status of the fishery.

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM XXVI TO AMENDMENT 3 TO THE AMERICAN LOBSTER FISHERY MANAGEMENT PLAN

Harvester Reporting and Biological Data Collection



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. However, comments on this draft document may be given at the appropriate time on the agenda during the scheduled meeting. Also, if approved, a public comment period will be established to solicit input on the issues contained in the document.

ASMFC Vision Statement: Sustainably Managing Atlantic Coastal Fisheries

July 2017

Draft Document for Board Discussion. Not for Public Comment.

Public Comment Process and Proposed Timeline

In January 2017, the American Lobster Management Board initiated Draft Addendum XXVI to improve harvest reporting and biological data collection in the American lobster fishery. This draft Addendum seeks to utilize the latest technology to improve reporting, increase the spatial resolution of harvester data, collect greater effort data, and advance the collection of biological data offshore. This document presents background on the Atlantic States Marine Fisheries Commission’s management of lobster, the addendum process and timeline, a statement of the problem, and management measures for public consideration and comment.

The public is encouraged to submit comments regarding the proposed management options in this document at any time during the addendum process. The final date comments will be accepted is **Month, Day 201X at 5:00 p.m. EST**. Comments may be submitted by mail, email, or fax. If you have any questions or would like to submit comments, please use the contact information below.

Mail: Megan Ware

Atlantic States Marine Fisheries Commission

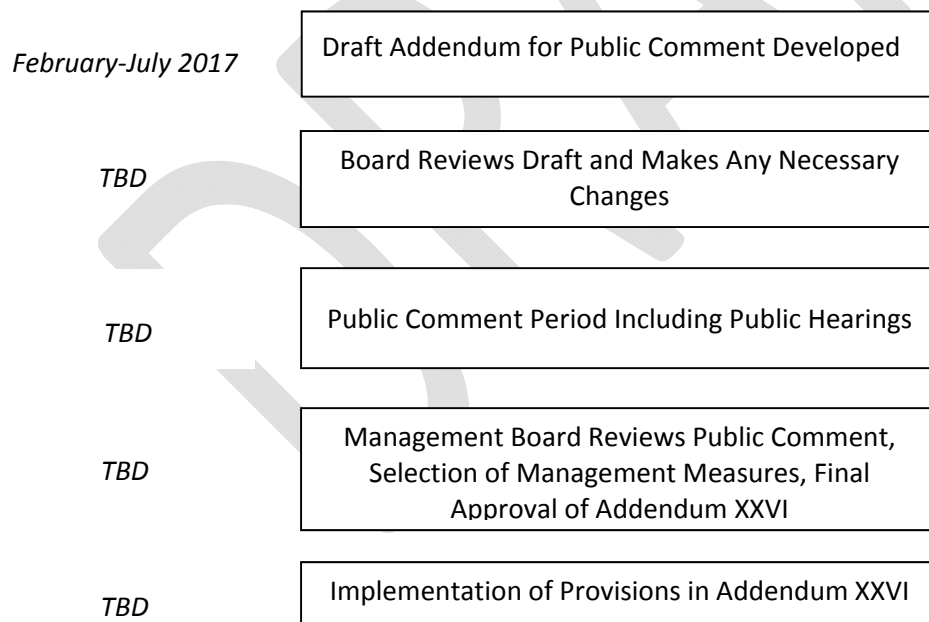
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(Subject line: Lobster
Draft Addendum XXVI)



Executive Summary

Recent management action in the Northwest Atlantic, including the protection of deep sea corals, the declaration of a national monument, and the expansion of offshore wind, have highlighted deficiencies in the current lobster reporting requirements. These deficiencies include a lack of spatial resolution in harvester data and a significant number of fishermen who are not required to report. As a result, efforts to estimate the economic impacts of these various management actions on the lobster fishery have been hindered and states have been forced to piece together information from harvester reports, industry surveys, and fishermen interviews to gather the information needed. In addition, as the fishery continues to move further offshore, there is a greater disconnect between where the fishery is being prosecuted and where biological sampling is occurring. More specifically, while most of the sampling occurs in state waters, an increasing portion of lobster is being harvested in federal waters. This can impede effective management of the species as biological information on the offshore portion of the fishery is lacking.

The Board initiated Draft Addendum XXVI to improve harvester reporting and biological data collection in state and federal waters. The goals of this addendum are to: 1) utilize the latest technology to improve reporting; 2) increase the spatial resolution of harvester data; 3) collect greater effort data; and 4) advance the collection of biological data offshore.

The Draft Addendum includes three issues. The first issue asks what percentage of harvesters should be required to report in the lobster fishery. The Addendum recommends, but does not require, the implementation of electronic reporting by the states as a cost-effective method to increase harvester reporting. The second issue asks whether the data elements currently collected should be expanded and/or altered to improve the spatial resolution of data and address concerns of the Atlantic Large Whale Take Reduction Team. The third issue asks whether a pilot program should be established to test electronic tracking technology in the lobster fishery. In addition, Draft Addendum XXVI provides several recommendations to NOAA Fisheries, including implementation of 100% federal harvester reporting, creation of a fixed-gear VTR form, and expansion of a biological sampling program offshore.

Table of Contents

| | |
|-----------------------------------------------------------------------|----|
| 1.0 Introduction | 1 |
| 2.0 Overview | 2 |
| 2.1 Statement of Problem..... | 2 |
| 2.2 History of Reporting Requirements | 2 |
| 2.3 Current Reporting Requirements for States..... | 2 |
| 2.4 Reporting in Federal Waters..... | 3 |
| 2.5 Deficiencies with Current Harvester Reporting..... | 4 |
| 2.5.1 Deficiencies in Data Components Collected..... | 4 |
| 2.5.2. Deficiencies in Percentage of Harvester Reporting..... | 5 |
| 2.5.3 Deficiencies in Data Collected Pertaining to ALWTRT | 6 |
| 2.6 Deficiencies in Current Biological Data Collection Programs | 6 |
| 2.6.1 External Biological Data Collection Programs..... | 8 |
| 2.7 Lobster Reporting Work Group..... | 9 |
| 2.8 Status of the Stock | 10 |
| 2.9 Status of Commercial Fishery | 11 |
| 3.0 Management Options | 11 |
| 4.0 Compliance | 15 |
| 5.0 Recommendations for Actions in Federal Waters..... | 15 |
| 6.0 References | 16 |

1.0 Introduction

The Atlantic States Marine Fisheries Commission (ASMFC) has coordinated the interstate management of American lobster (*Homarus americanus*) from 0-3 miles offshore since 1996. American lobster is currently managed under Amendment 3 and Addenda I-XXV to the Fishery Management Plan (FMP). Management authority in the Exclusive Economic Zone (EEZ) from 3-200 miles from shore lies with NOAA Fisheries. The management unit includes all coastal migratory stocks between Maine and Virginia. Within the management unit there are two lobster stocks and seven management areas. The Gulf of Maine/Georges Bank (GOM/GBK) stock spans the northern portion of the lobster fishery and is comprised of part, or all, of four Lobster Conservation Management Areas (LCMAs). The Southern New England (SNE) stock generally includes waters south of Cape Cod and is comprised of part, or all, of five LCMAs. There are ten states (Maine to Virginia) which regulate American lobster in state waters and regulate the landings of lobster in state ports.

The Board initiated Draft Addendum XXVI to improve harvester reporting and biological data collection in state and federal waters. Under Addendum X (2007), states are required to implement, at a minimum, 10% active harvester reporting and 100% dealer reporting. Addendum X also requires states to complete fishery dependent and independent biological sampling. Specifically, states are required to conduct sea and/or port sampling as well as a fishery-independent survey, such as an annual trawl survey, a ventless trap survey (VTS), or a settlement survey. *De minimis* states are exempt from the biological sampling requirements in Addendum X.

While Addendum X established a coastwide baseline for harvester reporting and biological data collection, recent management action has highlighted several data deficiencies in the lobster fishery. One of the foremost deficiencies is the lack of spatial data collected in the lobster fishery. While harvesters are required to report the statistical area in which they fish, this information is too coarse to respond to the increasing number of marine spatial planning efforts which require fine-scale data. Another deficit in the current reporting system is that not all lobstermen are required to report landings to either the state or NOAA Fisheries. Currently, only 10% of active harvesters in Maine are selected to submit landings reports each year and vessels which are only issued a federal lobster permit are exempt from Vessel Trip Reports (VTRs). Given that over 83% of lobster is landed in Maine and the fishery continues to move further offshore, the lack of harvester reporting in these areas results in critical data gaps in the fishery. Deficiencies in the collection of biological data were also highlighted in a January 2016 report by the American Lobster Technical Committee (TC) which noted that while inshore waters are adequately sampled, little biological sampling occurs offshore. This is a growing problem given that an increasing percentage of lobster is being harvested from federal waters.

This Addendum seeks to address these issues by improving the resolution and quality of data collected in the lobster fishery. The goals of this addendum are to: 1) utilize the latest technology to improve reporting; 2) increase the spatial resolution of harvester data; 3) collect greater effort data; and 4) advance the collection of biological data offshore.

2.0 Overview

2.1 Statement of Problem

Recent management action in the Northwest Atlantic, including the protection of deep sea corals, the declaration of a national monument, and the expansion of offshore wind, have highlighted the fact that current harvester reporting requirements do not provide the level of information needed to respond management issues. Furthermore, while the lobster fishery continues to move further offshore, the majority of biological data is collected inshore. This disconnect hinders effective management of the species. The Board initiated Draft Addendum XXVI in order to improve harvester reporting and biological data collection in state and federal waters. The management measures in this addendum are intended to utilize the latest technology to improve the spatial resolution of harvester data, increase the collection of fishery effort data, and promote the collection of biological data offshore.

2.2 History of Reporting Requirements

American lobster is currently managed under Amendment 3 and its subsequent addenda. Amendment 3, which was finalized in 1997, required states to, at a minimum, maintain their current reporting and data collection programs. At the time of implementation, the Atlantic Coastal Cooperative Statistics Program (ACCSP) was still being developed and data collection standards had not been completed for lobster. As a result, action to specify monitoring and reporting requirements was deferred until completion of a coastwide statistics program by ACCSP.

By 1999 data collection standards for ACCSP were nearly complete and Addendum I (1999) established data collection guidelines in the lobster fishery. Importantly, while it encouraged states to adopt monitoring and reporting standards, state agencies were not required to make any changes to their current reporting system. It wasn't until Addendum VIII (2006) that a consistent set of reporting requirements were implemented in the lobster fishery. Specifically, states were required to collect trip-level data from at least 10% of the lobster fishery. This included information on landings (i.e: catch in pounds) and effort (i.e: trap hauls, soak time, number of trips, total traps set, number of traps fished per trip). All dealers were required to report lobster landings, by weight, on a trip level basis. States were also required to implement fishery dependent data programs, such as sea sampling and port sampling, to collect information on lobster length, sex, and cull status.

2.3 Current Reporting Requirements

2.3.1 State Reporting Requirements

Addendum X (2007) outlines the current reporting requirements in the lobster fishery. These requirements built upon those established in Addendum VIII and ensure that the collection programs meet ACCSP standards. For catch reporting, Addendum X requires a two-ticket system in which states must implement at least 10% active harvester reporting, with the expectation of 100% harvester reporting over time, and 100% dealer reporting. All states have implemented 100% harvester reporting, with the exception of Maine which has 10% harvester reporting (Table 1). Harvester reports are required to include information such as vessel number, trip start date, statistical area, number of traps hauled, number of traps set, pounds of

lobster harvested, and trip length. Dealer reports are required to include information on the species landed, the pounds harvested, the state and port of landing, market grade, areas fished, and price per pound.

Addendum X also requires biological sampling from fishery independent and dependent sources. States are required to conduct sea sampling to characterize commercial catch and collect data on length, sex, v-notch, egg-bearing status, discards, cull status, and traps sampled. Port sampling is also required to collect information on length, sex, cull status, and market category. Sufficient sea sampling can replace port sampling. In addition, Addendum X requires states to implement fishery-independent sampling programs, with each state conducting either an annual trawl survey, a ventless trap survey (VTS), or a settlement survey. The VTS is designed to sample lobster habitats that may not be accessible to a trawl survey and provides information regarding the abundance of sub-legal lobsters (<53mm CL). Settlement surveys provide information on the youngest life stages of lobster (Stages IV and V). Several states carry out multiple fishery-independent sampling programs including Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut (Table 1). *De minimis* states (DE, MD, and VA) are not required to complete the biological collection programs prescribed in Addendum X.

2.3.2 Federal Reporting Requirements

For many federally permitted fisheries, catch information (including species caught and discarded, gear quantity, fishing location, and depth) is collected on a trip-level basis through Vessel Trip Reports (VTRs). However, a federal lobster permit does not contain a federal reporting requirement. This means that if a vessel is issued a federal lobster permit and that vessel has no other federal permits, the vessel is not required to fill out a VTR. As a result, a portion of the lobster fleet which fishes in federal waters is not required to submit landings reports; this portion varies spatially, with a smaller percentage reporting in nearshore waters of the GOM and a higher portion reporting in SNE and the Mid-Atlantic. For example, only 10% of all Maine federal permit holders and 3% of the total Maine lobster fleet report through VTRs. In statistical area 514 (Massachusetts coast), 25% of permits report with VTRs. This percentage increases with distance from shore as roughly 63% of the lobster fleet which fishes in statistical area 537 (south of Cape Cod) reports through VTRs and 98% of the fleet in statistical area 515 (near Hague line) reports with VTRs. A higher portion of vessels in the southern portion of the lobster fleet also report through VTRs as 95% of vessels hailing from New Jersey through Virginia submit VTRs. To avoid double reporting, states often accept VTRs in place of state reporting forms for those federally permitted vessels required to report.

The NMFS Northeast Fisheries Science Center also conducts a bottom trawl survey which has collected data on lobster abundance since 1967 (Table 1). The bottom trawl survey is conducted twice a year, in the spring and fall, and extends from the Scotian Shelf to Cape Hatteras, including the GOM and GBK. The survey uses a random sampling design and stratifies the survey area by depth. Data from the bottom trawl survey has been consistently incorporated into the lobster stock assessments and provides important information regarding lobster abundance offshore.

Draft Document for Board Discussion. Not for Public Comment.

Table 1: 2016 harvester reporting, dealer reporting, and biological data collection programs. New Hampshire and New York’s trawl surveys are conducted in conjunction with Maine and Connecticut, respectively. *De minimis* states are not required to implement biological data collection programs.

| | De Minimis Status in 2016 | % Dealer Reporting | % Harvester Reporting | Sea Sampling | Port Sampling | Trawl Survey | Ventless Trap Survey | Settlement Survey |
|----------------|---------------------------|--------------------|--------------------------------------|--------------|---------------|--------------|----------------------|-------------------|
| ME | | 100% | 10% | ✓ | | ✓ | ✓ | ✓ |
| NH | | 100% | 100% | ✓ | ✓ | ✓ | ✓ | ✓ |
| MA | | 100% | 100% | ✓ | | ✓ | ✓ | ✓ |
| RI | | 100% | 100% | ✓ | ✓ | ✓ | ✓ | ✓ |
| CT | | 100% | 100% | ✓ | | ✓ | | ✓ |
| NY | | 100% | 100% | ✓ | ✓ | ✓ | | |
| NJ | | 100% | 100% | ✓ | | ✓ | | |
| DE | ✓ | 100% | 100% | | | ✓ | | |
| MD | ✓ | 100% | 100% | ✓ | | ✓ | | |
| VA | ✓ | 100% | 100% | | | | | |
| NOAA Fisheries | | 100% | VTR if permitted for another species | ✓ | ✓ | ✓ | * | |

*NOAA supports ventless trap surveys through grants.

2.5 Deficiencies with Current Harvester Reporting

2.5.1 Deficiencies in Spatial Resolution of Data

While Addendum X established a consistent baseline for reporting, recent management actions have highlighted serious data deficiencies in the lobster fishery. These deficiencies have hindered the ability to assess the status of the offshore stock, effectively manage the resource, and respond to the growing use of marine spatial planning. One of the largest deficiencies is the lack of spatial information collected in the lobster fishery. While harvester reports are required to indicate statistical area fished, information regarding LCMA or depth are not consistently collected (Table 2). This can hinder management of the species as a single statistical area can span multiple LCMAs, each of which has a unique set of regulations. For example, statistical area 521 spans LCMAs 1, 2, 3, and Outer Cape Cod (OCC), each of which has a different combination of gauge size requirements. Furthermore, the coarse resolution of data collected by statistical area makes it difficult to determine potential impacts to the fishery from finer-scale marine spatial planning in the Northwest Atlantic. For example, recent action to protect deep-sea corals in GBK and the GOM required information on the magnitude of lobster fishing in specific areas in order to calculate potential economic impacts. Without this fine scale spatial information, impacts to the lobster and Jonah crab fisheries had to be estimated by piecing together information from harvester reports, industry surveys, and fishermen interviews. Moreover, as the ocean continues to be divided between user groups, the lack of spatial resolution in lobster harvester data collected has impeded the ability to accurately assess impacts to the lobster and Jonah crab industries.

Another deficiency is the lack of data collected on the depth at which the lobster fishery takes place. Recent management actions, including the establishment of a national monument, have considered a series of options which differ by depth. Given that information regarding the depth of lobster fishing activity is not consistently collected among the states (Table 2), it is challenging to respond to these management actions and illustrate potential economic

consequences to the lobster fishery. This situation is made worse by the poor spatial resolution of the data.

Table 2: Data components collected in current harvester reports along the coast.

| | Reports Submitted | Electronic Option | Trip Length | # Of Crew | Traps Hauled | Active Traps Fished | Soak Time | Depth Fished | Stat Area | LCMA | Lat/ Long | Distance from Shore | Port Landed | Pounds Landed | Disposition |
|-------------|--------------------|-------------------|-------------|-----------|--------------|---------------------|-----------|--------------|-----------|------|-----------|---------------------|-------------|---------------|-------------|
| ME | Monthly | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ | |
| NH | Monthly | SAFIS | ✓ | | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ | ✓ |
| MA | Monthly | SAFIS | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| RI | Quarter | SAFIS | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| CT | Monthly | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | | | | ✓ | ✓ | ✓ |
| NY | Monthly | SAFIS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | |
| NJ | Monthly | SAFIS | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | |
| Federal VTR | Weekly or Monthly* | eVTR | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ | |

2.5.2. Deficiencies in Percentage of Harvester Reporting

In addition to the lack of spatial resolution of harvester data, the percentage of harvesters reporting, in some areas, limits the ability to assess trends in the entire fishery. Addendum X requires a minimum of 10% harvester reporting; however, the expectation was that, in time, all states would implement 100% harvester reporting. Currently, Maine is the only state which has not implemented 100% harvester reporting and this is largely due to the size of the fishery. For context, more trips are taken by Maine lobstermen each year than the combined number of trips taken for all species in the states of New Hampshire, Rhode Island, Connecticut, New York, New Jersey, Delaware, South Carolina, and Georgia. As a result, expanding the Maine harvester reporting program to all lobstermen could cost the state an additional \$500,000 a year, under current reporting methods. Furthermore, not all federally licenses lobstermen are required to submit harvester reports as those vessels which only have a lobster permit are not required to complete VTRs.

The lack of fishermen and vessels required to report results in critical data gaps in the lobster fishery. While 100% dealer reporting along the coast provides information on the total amount of lobster landed in each state, information regarding the location of catch and effort data is not collected in dealer reports. As a result, it is unclear where these lobster are caught and what level of effort is required to harvest them. Furthermore, changes in the spatial distribution of, and level of effort in, the lobster fishery cannot be accurately summarized coastwide. These data gaps are particularly concerning given that Maine accounts for over 80% of lobster landed in the U.S. and the offshore portion of the lobster fishery in SNE is becoming increasingly scrutinized as lobster abundance continues to decrease inshore.

In order to determine the level of harvester reporting required to effectively assess trends throughout the entire fishery, the TC analyzed what percentage of harvester reporting represents a statically valid sample. A statistically valid sample of harvester reporting is needed to scale up a subset of trip level reports to the full fishery.

(Add TC analysis on statistically valid sample of harvester reporting)

2.5.3 Deficiencies in Data Collected Pertaining to ALWTRT

An important consideration in the management of American lobster is the fishery's interaction with whales, particularly the North Atlantic right whale which is listed as endangered under the Endangered Species Act. In order to reduce the risk of serious injury and death of large whales due to entanglement in commercial fishing gear, the Atlantic Large Whale Take Reduction Team (ALWTRT) was established in 1996. The Take Reduction Plan (TRP), which was first published in 1997, specifies gear modifications and restrictions, such as weak links, gear markings, and seasonal prohibitions on locations where traps can be set.

The TRP continues to evolve as information regarding the spatial distribution of the North Atlantic right whale and fishing gear continue to improve. A critical component of the TRP is the co-occurrence model, which pairs information regarding the distribution of whales and commercial fishing gear to predict areas where whales may be prone to entanglement. In May 2016, a subset of the ALWTRT met to discuss ways to improve the collection of fishing effort data as it pertains to the co-occurrence model. As a result of this meeting, the ALWTRT identified current gaps in fishery effort data collected by the states and NMFS. This includes information regarding the number of traps per trawl, number of vertical lines, and length of vertical lines. In April 2017, the ALWTRT again met to discuss data gaps in fishery data and potentially consider ways to collect that data independent of the states. This addendum represents an opportunity for the Lobster Board to proactively address the concerns of the ALWTRT by enhancing current reporting methods.

2.6 Deficiencies in Current Biological Data Collection Programs

In a January 2016 report to the Board, the TC stated that while the biological collection programs currently administered are sufficient to characterize catch in state waters, the resolution of biological data is lacking in federal waters. Currently, states administer a suite of biological sampling programs (i.e. sea sampling, port sampling, VTS, larval surveys, trawl surveys) to assess the status of the lobster stocks; however, much of this effort is contained to state waters or takes place in nearshore waters which are accessible in a day trip. Table 3 and Appendix 2 show the location and depth of trawl surveys and VTS used in the 2015 Stock Assessment. While the surveys span a broad length of the coast, most state trawl surveys do not extend past the 12 mile territorial sea boundary. The deepest trawl survey is the NEFSC Bottom Trawl Survey which surveys depths up to 365m. VTS, which are conducted from Maine through Rhode Island, are split into three depth strata and typically do not sample areas greater than 60m. In addition, settlement surveys concentrate on coastal nursery areas from Jonesport, Maine to Long Island Sound. Given that much of the sampling takes place by scuba divers, the survey is limited to inshore areas. Finally, while NOAA Fisheries has an extensive fishery dependent observer program, the lobster fishery has not historically been considered a sampling priority.

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Table 3: Location and depth of trawl surveys and ventless trap surveys by jurisdiction.

| | | Location | Depth |
|------------------------------|-----------------------------------|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Trawl Surveys | ME-NH Inshore Trawl Survey | Downeast Maine to New Hampshire | 4 strata: 5-20 fathoms, 21-35 fathoms, 36-55 fathoms, > 56 fathoms out to the 12 mile territorial limit. |
| | MA Trawl Survey | Cape Ann to Buzzards Bay | 6 strata: 0-30ft, 31-60ft, 61-90ft, 91-120ft, 121-180ft, 191ft-12 mile territorial boundary |
| | RI Trawl Survey | Narragansett Bay, Rhode Island Sound, Block Island Sound | 6 strata; Narragansett Bay: 10-20ft, >20ft; RIS/BIS: 10-30ft, 30-60ft, 60-90ft, 90-120ft, >120ft |
| | CT-NY Trawl Survey | Groton, CT to Greenwich, CT in both CT and NY waters | 4 strata: 0-9m, 9.1-18.2m, 18.3-27.3m, and 27.4+ m |
| | NJ Trawl Survey | Sandy Hook, NJ to Cape Hemlopen DE | 18-90ft |
| | NEFSC Bottom Trawl Survey | Scotian Shelf to Cape Hatteras | 7 strata: <9m, 9-18m, >18-27m, >27-55m, >55-110m, >110-185m, and >185-365m. |
| Ventless Trap Surveys | ME VTS | SAs 511, 512, 513 excluding estuaries of Kennebec and Penobscot Rivers | 3 strata: 1-20m, 21-40m, 41-60m |
| | NH VTS | SA 513 excluding Great Bay, Piscataqua River, and Hampton Harbor | 3 strata: 1-20m, 21-40m, 41-60m |
| | MA VTS | SA 514, 538 excluding the southwest corner of Cape Cod Bay, Vinyard Sound, and Nantucket Sound | 3 strata: 1-20m, 21-40m, 41-60m |
| | RI VTS | 539 excluding ester portion of Block Island Sound | 3 strata: 1-20m, 21-40m, 41-60m |

The dearth of biological sampling offshore is a growing concern given the increasing portion of lobster which is being harvested outside of state waters. In SNE, there has been a marked increase in the proportion of lobster harvested in offshore statistical areas. In 1998, 87% of lobster harvested in SNE were from the inshore portion of the stock; however, declines in the stock, particularly inshore, have led the fishery to be primarily executed offshore. In fact, 2011 was the first year in which a greater portion (55%) of lobster were landed offshore than inshore in SNE (Figure 1). A similar trend can be seen in the GOM where the percentage of trips occurring greater than 3 miles from shore is increasing. Specifically, in 2008, the number of trips that occurred between 0-3 miles from shore was 87%, while only 13% of trips occurred outside

of 3 miles from shore. In 2015, the percentage of trips that occurred between 0-3 miles from shore decreased to 80%, while the percentage of trips that occurred greater than 3 miles from shore increased to 20%.

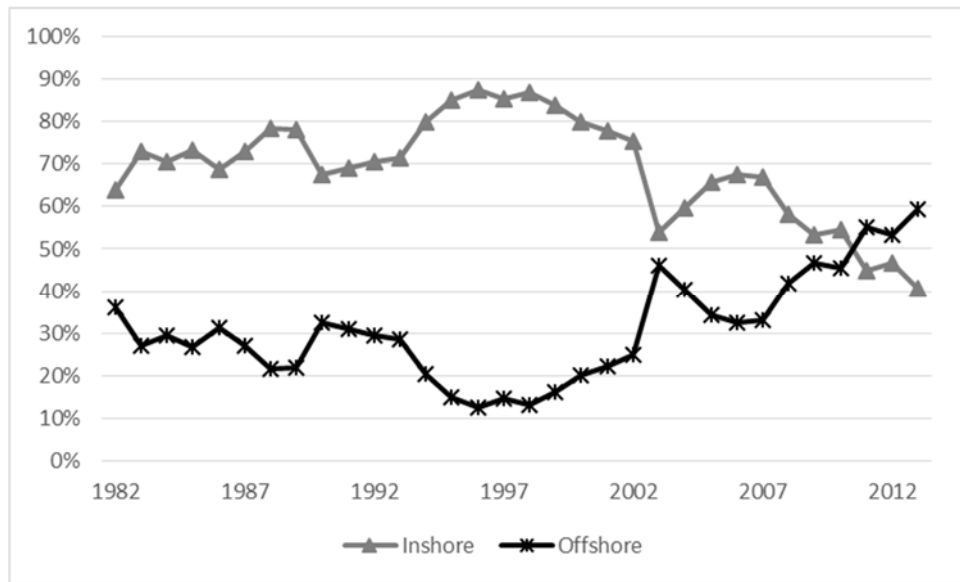


Figure 1: Percentage of landings in SNE occurring in the inshore and offshore fishery. The inshore fishery is defined as landings from statistical areas 538, 539, 611, 612, 613, 614, 621, 625, 631, and 635. The offshore fishery is defined as landings from statistical areas 533, 534, 537, 615, 616, 622, 623, 624, 626, 627, and 632.

2.6.1 External Biological Data Collection Programs

Given financial and geographic constraints on sampling conducted by states, external institutions have begun to implement their own fishery dependent sampling programs in order to collect greater information on the offshore lobster fishery. One example of this is the Commercial Fisheries Research Foundation (CFRF), a non-profit foundation which conducts collaborative fisheries research projects. Established by commercial fishermen, CFRF collaborates with industry members to collect biological data and support fisheries research. One of the programs conducted by CFRF has been their On-Deck Data Program, through which participating lobster vessels conduct at-sea sampling during specified trips each month. The On-Deck Data application randomly selects trawls to sample throughout a trip and fishermen collect biological information on carapace length, sex, shell disease, presence of eggs, v-notching, shell hardness, and disposition. Participating vessels also deploy ventless traps which expand the spatial extent of the state's ventless trap programs to areas further offshore. Currently, 17 vessels participate in the CFRF program and 94,325 lobsters have been sampled as of June 2017. Biological information collected from CFRF was incorporated into the 2015 Stock Assessment.

The geographic range of the CFRF program stretches from New Hampshire to New Jersey. Table 4 shows specific statistical areas in which CFRF participating vessels sample as well as the

magnitude of sampling in those areas. The largest amount of sampling occurs in statistical areas 537 and 539 (south of Cape Cod and Rhode Island) with additional sampling occurring in Georges Bank (statistical areas 525 and 526) and offshore Gulf Maine (statistical areas 464 and 512). Limited levels of sampling occurs off of Long Island (statistical area 613) (Table 4).

Table 4: The geographic distribution of CFRF lobster sampling, by statistical area, as of June 2017. Data provided by CFRF.

| Statistical Area | Commercial Lobster Sessions | Ventless Lobster Sessions | Lobsters Sampled |
|-------------------------|------------------------------------|----------------------------------|-------------------------|
| 464 | 37 | 5 | 3872 |
| 465 | 10 | 9 | 1552 |
| 512 | 37 | 21 | 4793 |
| 515 | 13 | 20 | 1139 |
| 522 | 1 | 0 | 83 |
| 525 | 98 | 23 | 3196 |
| 526 | 52 | 17 | 3168 |
| 537 | 320 | 324 | 17353 |
| 539 | 651 | 994 | 38413 |
| 561 | 23 | 2 | 2265 |
| 562 | 95 | 162 | 8102 |
| 613 | 26 | 29 | 898 |
| 616 | 76 | 137 | 6357 |

2.6.2 Identification of Data Gaps In Offshore Sampling

In order to provide guidance on where additional biological sampling efforts should be conducted in the lobster fishery, the TC reviewed the spatial distribution of various sampling efforts, including state surveys, at-sea sampling, and CFRF data programs.

(Add TC recommendations on where future sampling efforts should be concentrated and what sampling should occur in those areas)

2.7 Lobster Reporting Work Group

Recognizing the need to assess current data collection in the lobster fishery, the Board established a Lobster Reporting Work Group to discuss data deficiencies in the lobster fishery and ways to improve them. The Work Group, which met in September 2016, was comprised of state agency staff, TC members, Board members, federal representatives, ACCSP staff, and ASMFC staff. As a part of their discussion, the Work Group developed five goals for reporting in the lobster fishery.

- 1) Improve the spatial resolution of harvester reporting
- 2) Utilize the latest technology to improve and increase reporting
- 3) Collect greater effort data in harvester reports
- 4) Define inshore vs. offshore areas in the lobster fishery
- 5) Proactively address data concerns of the ALWTRT

In order to achieve these goals, the Work Group compiled a list of recommendations to improve reporting in the lobster fishery (Table 5). The recommendations were categorized as short-term (less than 1 year), intermediate (1-2 years), and long-term (greater than 2 years). The short-term recommendations sought to maximize commercial harvester reporting under the current framework and provide a uniform set of definitions for inshore vs. nearshore vs. offshore areas. The intermediate recommendations intended to build upon the existing reporting programs by requiring increased harvester reporting and the collection of additional data components. The long term recommendations sought to incorporate new technology into the lobster fishery in order to efficiently and effectively report landings, monitor compliance, and identify critical areas for the lobster fishery. These goals and recommendations provided a basis for the development of this addendum.

Table 5: Recommendations from the Lobster Reporting Work Group on ways to improve reporting in the lobster fishery.

| |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Short Terms Recommendations |
| -Maximize ME’s 10% harvester reporting by only including commercial license holders who have actively fished in the past two years |
| -Defined the inshore fishery as 0-3 miles, the nearshore fishery as 3-12 miles, and the offshore fishery as >12 miles |
| Intermediate Recommendations |
| - Require 100% active harvester reporting for all state and federally permitted lobster license holders; for resource limited jurisdictions unable to achieve 100% harvester reporting, at a minimum, states should require reporting from a statistically valid sample of harvester reporting |
| - Add the following data components to current harvester reporting coastwide: number of trap hauls, soak time, catch disposition, gear configuration, number of vertical lines, LCMA, depth |
| - Further delineate NMFS statistical areas on harvester trip reports |
| Long Term Recommendations |
| - Establish an electronic swipe-card system for harvester and dealer reports |
| - Incorporate VMS or another locator beacon to all lobster vessels |
| - Establish an electronic fixed-gear VTR for all federal permit holders |

2.8 Status of the Stock

The 2015 peer-reviewed stock assessment report indicated a mixed picture of the American lobster resource, with record high stock abundance throughout most of the GOM and GBK and record low abundance and recruitment in SNE.

The assessment found the GOM/GBK stock is not overfished and not experiencing overfishing. GOM and GBK were previously assessed as separate stock units; however, due to evidence of seasonal migrations by egg-bearing females between the two stocks, the areas were combined into one biological unit. While model results show a dramatic overall increase in stock abundance in the GOM/GBK, population indicators show young-of-year estimates are trending downward. This could indicate a potential decline in recruitment and landings in the coming years.

Conversely, the assessment found the SNE stock is severely depleted. Recruitment indices show the stock has continued to decline and is in recruitment failure. The inshore portion of the SNE stock is in particularly poor condition with surveys showing a contraction of the population. This decline could impact the offshore portion of the stock if it is dependent on recruitment from inshore areas. Landings in SNE are expected to decline since the extremely poor year classes which have settled since 2008 have yet to recruit to the fishery.

2.9 Status of Commercial Fishery

The American lobster fishery has seen incredible expansion in effort and landings over the last 40 years, with coastwide landings rising from roughly 39 million pounds in 1981 to over 158 million pounds in 2016. Ex-vessel value in 2016 set a new record at over \$660 million. Much of this increase can be attributed to high landings in the Gulf of Maine, and in particular, the state of Maine; since 1981, Maine lobster landings have risen over 500% from 22.6 million in 1981 to 131.9 million in 2016. In contrast, landings in states such as Connecticut and New York have dramatically decreased from their peak in the 1990s. In 1996, New York lobster landings were 9.4 million pounds but in 2016, only 218,354 pounds were landed in the state. A similar trend can be seen in Connecticut. These rapid decreases in landings are the result several factors including warming waters, increased predation, and continued fishing pressure.

3.0 Management Options

This section proposes to replace Section 4.1 of Addendum X to Amendment 3. The intent of these management options is to improve harvester reporting and biological data collection.

3.1 Dealer and Harvester Reporting

The following outline the requirements for dealer reporting in the lobster fishery.

1. There is 100% mandatory dealer reporting. Dealer reports include: unique trip ID (link to harvester report), date, species, quantity (lbs), state and port of landing, price per pound, and market grade and category.
2. There is a two-ticket system for dealer and harvester reports. This is used to provide verification between the two landings information. Harvester report trip data and catch estimates (in pounds) and dealers report landing weights (in pounds).
3. Harvester and dealers are required to report standardized data elements for each trip on a monthly basis.
4. Permit holders are linked to federal vessel or individual permit/license level reporting for lobsters using ACCSP protocol (<http://www.accsp.org/cfstandards.htm>).
5. ACCSP stores lobster landings information.

3.1.1 Electronic Reporting

This document considers increases in the percent of active harvester reporting in the lobster fishery (see *Issue 1*). Given increases in harvester reporting under the current methodology (ie: paper reports) may result in large costs to some states, it is highly recommended that states implement electronic reporting in the lobster fishery. Electronic reporting represents a cost effective method to collect data in the lobster fishery since it reduces the need for staff to convert paper reports into an electronic format. Furthermore, electronic reporting provides the

flexibility to collect expanded data elements. Currently, electronic reporting is not widely used throughout the lobster fishery.

Should states implement electronic reporting, it is recommended that states use the SAFIS application eTrips, or eTrips Mobile given this platform can be implemented at little to no cost to the states or fishermen, it is approved by GARFO as a platform to submit eVTRs, and there is a well-established working relationship between ASMFC and ACCSP. States may choose to use an electronic reporting platform other than eTrips; however, this platform must implement the ACCSP Data Standards and be compatible with the eTrips Application Programming Interface (eTrips API), in order for the data to be seamlessly consolidated with other sources.

States wishing to use a different platform may submit a proposal to the Board which outlines why the state is pursuing a different electronic reporting platform and demonstrates that the platform meets the reporting requirements of this Addendum. Furthermore, states must demonstrate that the alternative electronic reporting platform can accommodate the large scale of the lobster fleet. Proposals must be reviewed and approved by the Board.

(Insert table which shows current percentage of lobster harvester that report electronically)

Issue 1: Percent Harvester Reporting

This issues asks what the minimum percentage of harvester reporting should be in the lobster fishery. States are encouraged to use electronic reporting as a cost-effective method to increase harvester reporting. Section 3.1.1. outlines the requirements for electronic reporting.

Option A: Status Quo

Under this option, at least 10% of active commercial harvesters are required to report trip level landings. States which currently require greater than 10% harvester reporting are required to maintain that higher level of reporting. An active harvester is defined as an individual who landed lobster, in any amount, at some point during the past two calendar years.

Option B: X% Harvester Reporting

Under this option, at least X% of active commercial harvesters are required to report trip level landings. This percentage was identified by the TC as being a statistically valid sample of harvester reporting. States which currently require greater than X% active commercial harvester reporting are required to maintain that higher level of reporting. States which currently require less than X% active commercial harvester reporting may phase-in the higher level of reporting over X years. An active harvester is defined as an individual who landed lobster, in any amount, at some point during the past two calendar years.

Option C: 100% Harvester Reporting

Under this option, 100% of active commercial lobster permit holders are required to report trip level landings. States which currently require less than 100% active commercial harvest reporting may phase-in the higher level of reporting over 5 years, such that in year 1 there is a minimum requirement of 20% active commercial harvester reporting, in year 2 there is a

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minimum requirement of 40% active commercial harvester reporting, in year 3 there is a minimum requirement of 60% active commercial harvester reporting, in year 4 there is a minimum requirement of 80% active commercial harvester reporting, and in year 5 there is 100% active commercial harvester reporting. An active harvester is defined as an individual who landed lobster, in any amount, at some point during the past two calendar years.

Issue 2: Harvester Reporting Data Components

This issue asks what data elements must be collected in harvester reports.

Option A: Status Quo

Harvester reports must include: a unique trip ID (link to dealer report), vessel number, trip start date, location (NMFS Statistical Area), number of traps hauled, traps set, quantity (lbs), and trip length.

Option B: Expanded Data Elements

In addition to the data components listed in Option A, harvester reports must report on an expanded set of data elements. These include location (based on a 10' square resolution), depth (most common depth fished at during trip), bait type, total number of traps in water, and number of vertical lines in water. The intent of this additional information is to provide greater spatial resolution to harvester reporting and proactively address concerns of the ALWTRT. Electronic tracking (Issue 3) can replace the need to provide information on location and depth.

(The PDT is still working to develop Issue 2, including how additional data is collected. Staff are planning to have conversations with NOAA Protected Resource staff to better understand the data needs of the ALWTRT so that the Board can be proactive in addressing these needs and avoid double reporting requirements on fishermen.)

Issue 3: Electronic Tracking

This issue asks whether electronic tracking pilot program should be adopted in the lobster fishery. A pilot program provides an opportunity for various technologies to be tested in the lobster fishery.

Option A: Status Quo

Under this option, there is no electronic tracking pilot program in the lobster fishery.

Option B: Pilot Program for Electronic Tracking

Under this option, a one year pilot program is established to test electronic tracking devices on lobster fishing vessels. To design and implement the pilot program, a Subcommittee of Board members, PDT members, industry, and law enforcement will be convened. Fishermen interested in participating in the program will be identified through state agencies and industry associations. Ideally, fishermen from different states, fishing grounds, and with varying boat sizes will participate in the pilot program so that technologies can be tested in a variety of conditions. Multiple technologies can be tested when conducting the pilot program; however, the systems must have a fast ping rate (at least 1 ping every minute) and be a low cost device.

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The PDT recommends that specific technologies, including the Pelagic Data Systems solar powered device and tracking through the eTrips Mobile application, be explored. Fishermen who participate in the pilot program will not be required to purchase the technology; the Subcommittee will identify outside funding sources to support the pilot program.

Success of the tracking technology will be evaluated by looking at the ease of compliance (or non-compliance), ability to determine trap hauls from steaming, industry feedback, and law enforcement feedback. Following the one year pilot program, results of the program (including successes, challenges, and participant perspectives) will be presented to the Board. At that time, the Board may decide, through Board action, to end the pilot program, extend the pilot program for another year, or consider adoption of electronic tracking devices in part, or all, of the fishery. Should the Board consider adoption of electronic tracking in part, or all, of the fishery, a second round of public comment will be held.

3.2 Fishery Dependent Sampling

Non *de minimis* states are required to conduct fishery dependent sampling. It is recommended that states conduct, at a minimum, 5 sea and/or port sampling trips per year; however, states with substantial landings are encouraged to conduct one port or sea sampling trip per 100,000 pounds of lobster. Sufficient sea sampling can replace port sampling.

3.2.1 Port Sampling

The following outlines the requirements of port sampling.

1. In order to characterize commercial catch, the following data elements must be collected: length, sex, v-notched, egg bearing status, cull status.
2. In addition, the following data elements are recommended for collection, but not required: tissue for genetic or toxicity analysis, stomach contents for food habit assessments, gonads for maturity schedule data.
3. The number of port sampling trips, as well as the number of lobsters sampled, will be reported in Annual State Compliance Reports.

3.2.2. Sea Sampling

The following outlines the requirements of sea sampling.

1. In order to characterize commercial catch, the following data elements must be collected: length, sex, v-notch, egg bearing status, cull status, fishing location (NMFS Statistical Area, and total trawls or traps sampled.
2. In addition, the following data elements are recommended for collection, but not required: tissue for genetic or toxicity analysis, stomach contents for food habit assessments, gonads for maturity schedule data.
3. The number of sea sampling trips, as well as the number of lobsters sampled during sea sampling will be reported in Annual State Compliance Reports.

3.3 Fishery Independent Sampling

Non-de minimis states are required to conduct at least of the following fishery dependent surveys each year: an annual trawl survey, a ventless trap survey, and/or a young-of-year

survey. It is recommended that all statistical areas in the lobster fishery be sampled by at least one of the above fishery independent survey methods, including statistical areas in federal waters.

4.0 Compliance

If the existing lobster management plan is revised by approval of this draft addendum, the American Lobster Management Board will designate dates by which states will be required to implement the addendum. A final implementation schedule will be identified based on the management tools chosen.

5.0 Recommendations for Actions in Federal Waters

The management of American lobster in the EEZ is the responsibility of the Secretary of Commerce through the National Marine Fisheries Service. The Atlantic States Marine Fisheries Commission recommends that the federal government promulgate all necessary regulations in Section 3.0 to implement complementary measures to those approved in this addendum. In addition, ASMFC recommends the following be adopted in federal waters:

- 100% harvester reporting for all federal lobster permit holders – There is currently no federal permitting requirement attached to a federal lobster permit. One of the deficiencies identified in this Addendum is that not all lobster harvesters are required to complete trip level reports. This impedes effective management of the stock as it is unclear where lobster is being harvested and what effort is associated with that catch. As ASFMC works to improve harvester reporting and data collection, it is recommended that NOAA Fisheries implement 100% harvester reporting for all federal lobster permit holders.
- Creation of a fixed gear VTR for federal permit holders – As identified by the Lobster Reporting Work Group, one of the major hurdles in federal lobster reporting is that a single VTR form is used by a wide variety of gear types. This limits the amount of information that can be collected and can create confusion on how specific data elements apply to the lobster fishery. ASMFC recommends that a fixed-gear VTR form be established to fulfill the data needs specific to these fisheries, including information on soak time, number of hauls, and total gear in water.
- Implementation of a lobster sampling program in federal waters – As outlined in Section 2.6 of this Addendum, the biological sampling programs currently conducted in federal waters are insufficient to characterize commercial catch or understand the biological conditions of the offshore stock. This is particularly concerning given an increasing portion of the lobster fishery is being executed in federal waters. ASMFC recommends NOAA Fisheries support biological sampling offshore, whether this be through the expansion of existing sampling programs or adoption of a federal sampling program. Appendix 4 outlines a potential sampling program for federal waters, including areas where future sampling efforts should be focused and specific surveys which should be extended offshore.

6.0 References

Atlantic States Marine Fisheries Commission (ASMFC). 1997. Amendment 3 to the Interstate Fishery Management Plan for American Lobster.

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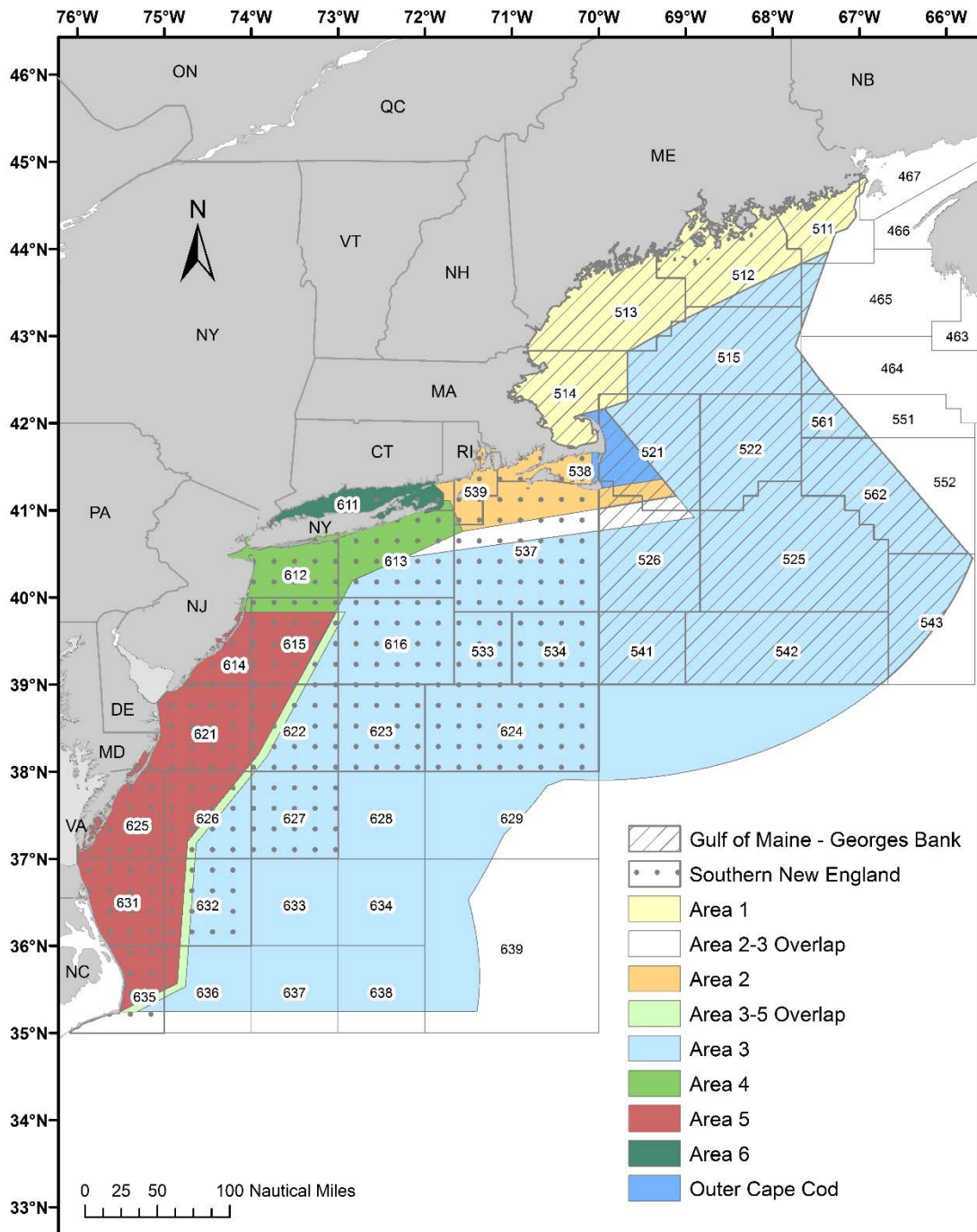
Atlantic Large Whale Take Reduction Team. Work Group Key Outcomes. May 12-18, 2016. Gloucester, MA. Found at:

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https://www.greateratlantic.fisheries.noaa.gov/protected/whaletrp/docs/Outreach%20Guides%20Updated%20May%202015/northeast_trap_pot_2015_2.pdf

Appendix 1: American lobster biological stocks and lobster conservation management areas.



Appendix 2: Maps of Trawl Surveys Conducted by Jurisdictions

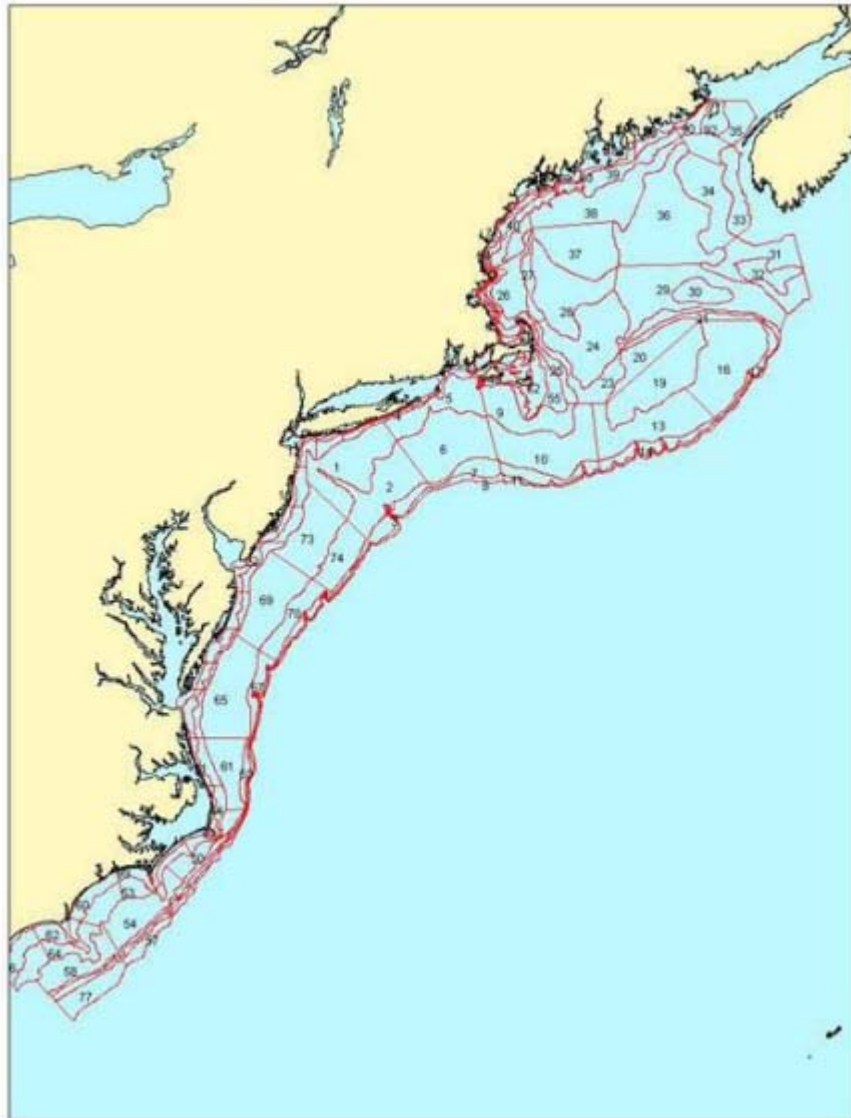


Figure 1: Map of area sampled by the NEFSC Bottom Trawl Survey. The survey is stratified by depth (<9m, 9-18m, >18-27m, >27-55m, >55-110m, >110-185m, >185-365m) and stations are randomly selected within each strata. (Source: NEFSC)

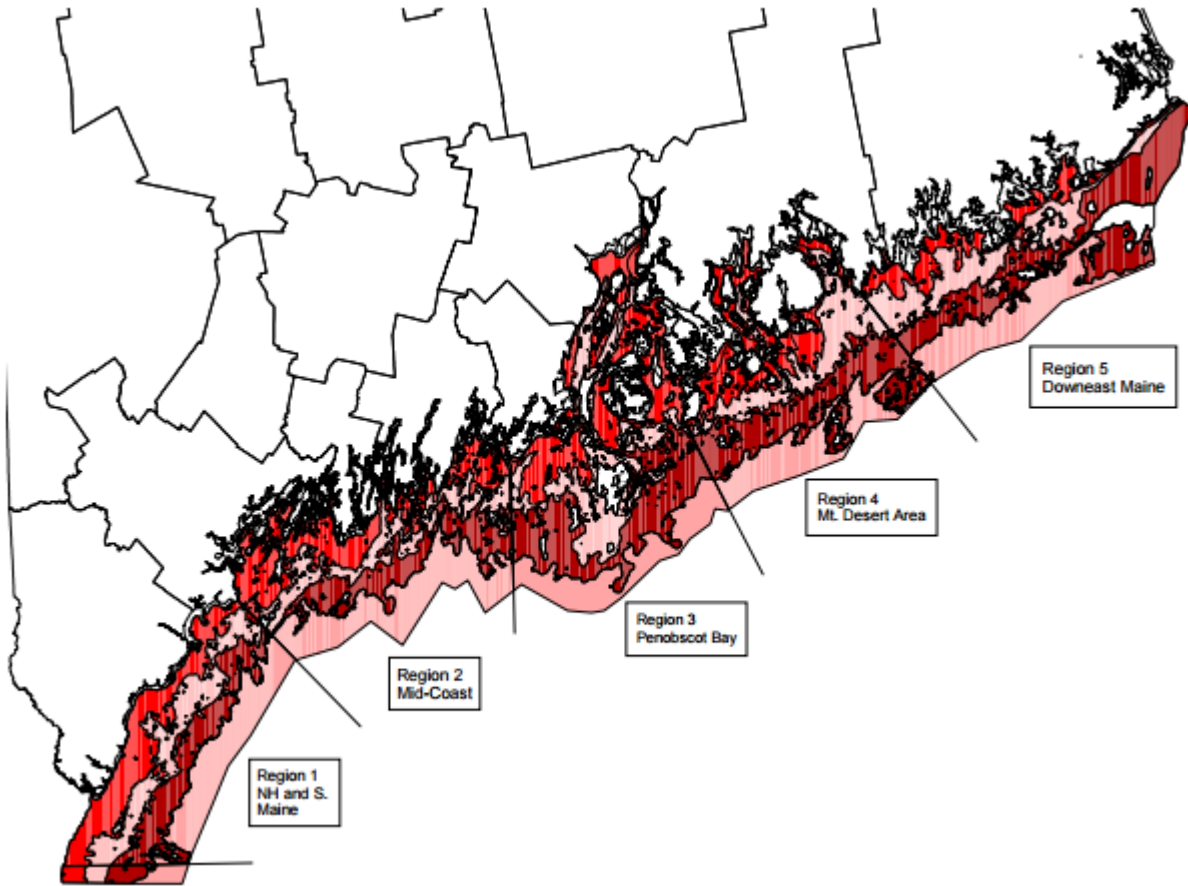


Figure 2: Map of area sampled by the Maine-New Hampshire Inshore Trawl Survey. The survey samples five regions and is stratified by four depth strata (5-20 fathoms, 21-35 fathoms, 36-55 fathoms, and greater than 56 fathoms to the 12 mile line). (Source: ME DMR)

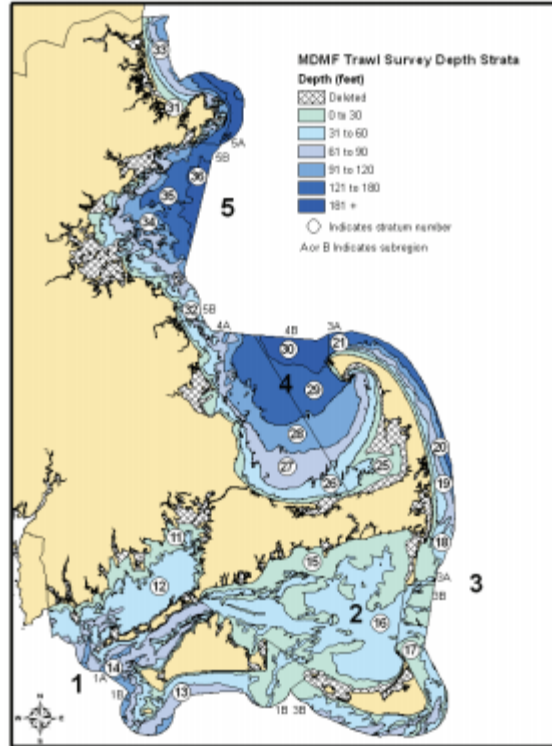


Figure 3: Location of the Massachusetts Trawl Survey. The survey is stratified based on five regions and six depth zones (0-30ft, 31-50ft, 61-90ft, 91-120ft, 121-180ft, >181ft out to 12 mile line).

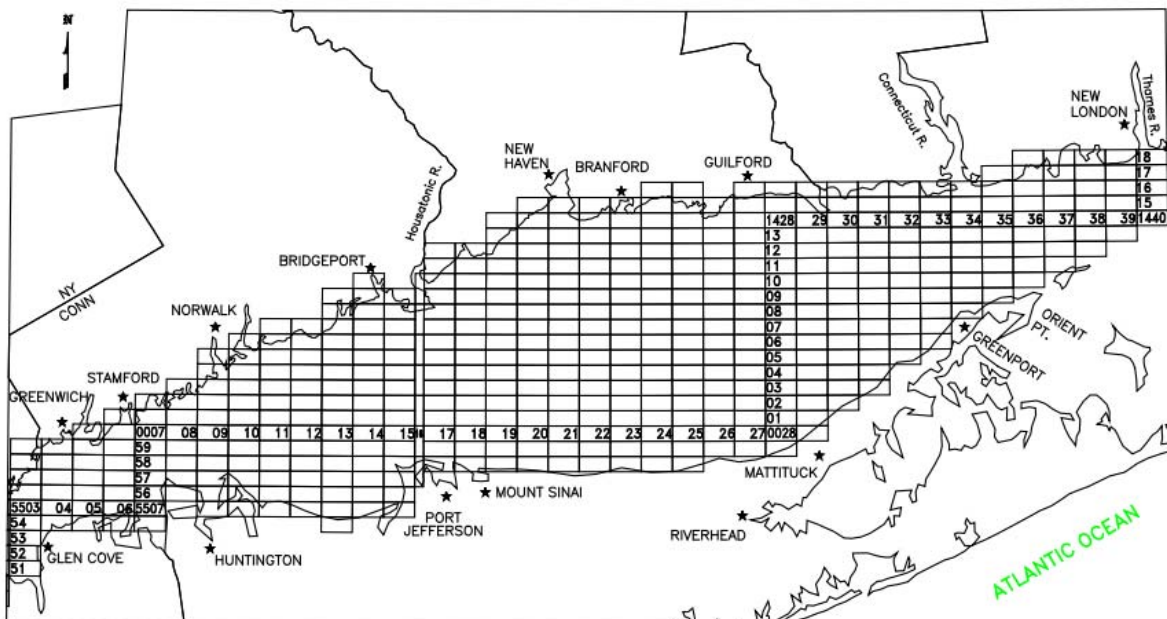


Figure 4: Connecticut – New York trawl survey grid. Each sampling site is 1x2 nautical miles with the first two digits representing the row number and the last two digits representing the column number. (Source: CT DEP)

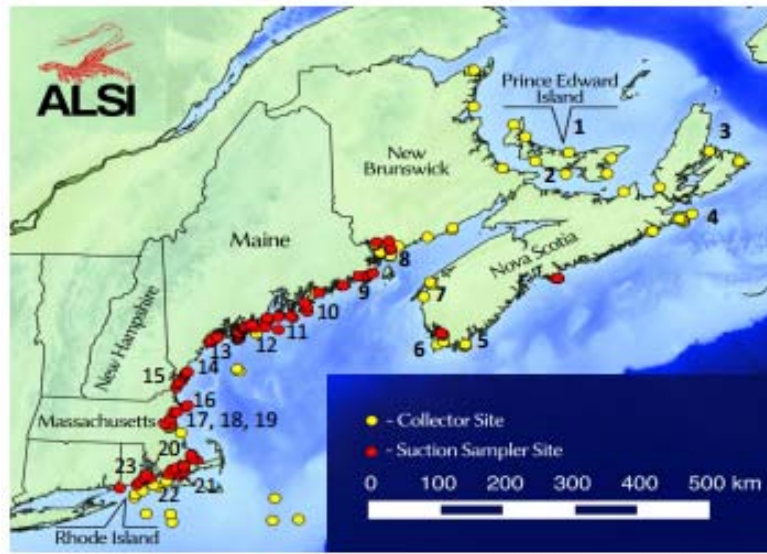


Figure 5: Locations sampled as a part of the 2015 American Lobster Settlement Index. Sites span New Brunswick, Canada down to Rhode Island. (Source: ALSI)

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Appendix 3: Sea sampling timing, location, and data components for each jurisdiction.

| | | ME | NH | MA | RI | CT | NY | NJ | MD | NOAA Observer |
|-----------------------------|-------------------------|----------------------------------------------|---------|----------------------------------------|----------------------------------------------------------|----------------------------------------|------------------|------------------------------------------|----|----------------|
| Sampling Information | Timing | May- Nov. w/ limited sampling in Dec. - Apr. | May-Nov | May-Nov | Monthly in inshore LCMT 2, quarterly in offshore LCMT 2 | 19 trips per year, scaled back in 2013 | Sporadic | May - Oct. w/ limited sampling in winter | | Year round |
| | Location | 7 zones in LCMA 1 | SA 513 | State waters, Cape Ann to Buzzards Bay | Narragansett Bay, RI Sound, canyon areas (70-200 fathom) | Long Island Sound | SA 611, 612, 613 | LCMAs 4 and 5 | | Atlantic coast |
| Biological Data | Carapace Length | Y | Y | Y | Y | Y | Y | Y | | Y |
| | # Lobsters | Y | | Y | | | | | | Y |
| | Weight | | | | | | | | | Y |
| | Sex | Y | Y | Y | Y | Y | Y | Y | | Y |
| | Shell Hardness | Y | Y | Y | Y | Y | | Y | | Y |
| | Cull Status | Y | Y | Y | Y | Y | | Y | | Y |
| | V-Notch | Y | | Y | Y | | | Y | | Y |
| | Egg stage | Y | Y | Y | Y | Y | Y | Y | | Y |
| Shell Disease | Y | Y | Y | Y | Y | Y | | | Y | |
| Trip Data | Catch | Y | Y | Y | Y | | Y | | | Y |
| | Depth | | Y | Y | Y | | | | | |
| | Bottom Type | | | | Y | | | | | |
| | Fishing Location | | Y | Y | Y | | Y | | | Y |
| | Bait | | | Y | Y | | | | | Y |
| Gear Data | Escape Vent Size | Y | | | Y | | | | | Y |
| | # Traps | Y | | Y | | | Y | | | Y |
| | # Traps in Trawl | | Y | | Y | | | | | |
| | # Endlines | Y | | | | | | | | |

Appendix 4: Offshore Biological Sampling Program for American Lobster

The following was prepared by the American Lobster Technical Committee to highlight data needs in the offshore lobster fishery. It is intended to provide guidance on where data gaps exist and how they can be addressed.

(Work is on-going by the TC)

DRAFT



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July 24, 2017

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Arlington, VA 22201

Dear Bob,

I'm writing as the Chair of the Area 3 Lobster Conservation Management Team and President of Atlantic Offshore Lobstermen's Association to express my dismay in the Technical Committee's (TC) "review of LCMT Proposals for Addendum XXV" (June 29, 2017). While I take issue with the TC's findings, my primary concern is one of process. It is dismaying to have taken the time and effort to respond to the Lobster Board's solicitation for plans only to find that those plans were evaluated, not based on the parameters set forth by the Board during their June action, but rather by a different set of standards. It is unfair and frustrating to again and again respond to the requests of the managers, many times acting proactively to try to be stewards of the resource, to later be told that our efforts don't count, aren't enough, or are no longer valid because the rules of the game have changed.

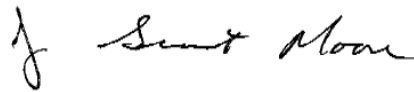
The TC's findings are not entirely unexpected given prior statements, however it is frustrating to have this memo come out so late in the Addendum XXV process. While I agree that trap numbers don't correlate directly to fishing effort and, subsequently, egg production, the TC's precautionary assumptions continue to be overly biased toward less conservation impact. They rightly worry about changes in fishing behavior, but, as repeatedly noted by industry members, the scientific experts have not properly considered operational constraints that make it uneconomical, or physically impossible, to reduce soak time or otherwise increase fishing power in response to less traps. Similarly, the discussion of reactivation of latent effort continues to ignore the constraints inherent in transferring multi-area permits, for example more than 25% of permits with Area 3 designations also qualify for other LCMAs; the market for traps, i.e. in Area 3 the limited traps still on the market are selling for 70% more than in the first year of federal transferability; and the conservation tax on transfers, including transfers owners makes between their existing permits. These realities serve to draw down the amount of potential fishing effort inherent in transferred traps and shelved permits.

In regards to the TC's findings specific to Area 3, the TC makes an honest effort to look at trap reductions and transferability to date, but an analysis of Massachusetts' state water permits is certainly not a correlate for Area 3. A major flaw in the MA analysis is that crab effort was not distinguished from lobster effort. Both are mixed in the analysis which make it virtually impossible

to reach any conclusions regarding effort changes. Although the TC noted that specific major flaw, they seem to totally disregard its impact when considering the Area 3 and Area 2 recommendations. As noted by the TC, a trap reduction of 25% results in up to a 13% increase in egg production, so the industry recommendation is vastly more conservative than the analysis and the Board requirements. For Area 3, NOAA GARFO can provide Area 3 specific transfer information, and permit history and fishing reports are available to categorize traps as active or latent and, perhaps, better categorize trips based on target species.

In closing, as the Board has readily acknowledged, the stock collapse in SNE is primarily a climate issue, not a fishing issue. We can't use fishery management to solve this problem and, frankly, it would be more appropriate to allow economic drivers to dictate fishing in SNE. We have already seen a shift toward Jonah crabs and this approach shouldn't be punished because data is lacking to properly categorize effort. I, therefore, ask that a good faith effort be initiated to distinguish crab effort from lobster effort well in advance of the next benchmark stock assessment, as this issue will surely come up during that process. I also request that the Board approve the Area 3 proposal as submitted.

Thank you for your time and consideration.

A handwritten signature in black ink that reads "J. Grant Moore". The signature is written in a cursive style with a large initial "J".

J. Grant Moore
Chair, Area 3 LCMT
President, Atlantic Offshore Lobstermen's Assn.

Revised

North Carolina Aquaculture Plan for American Eel
Pursuant to Addendum IV to the ASMFC Interstate
Fishery Management Plan for American Eel

North Carolina Department of Environmental Quality
Division of Marine Fisheries
PO Box 769
Morehead City, NC 28557

July 25, 2017

BACKGROUND

Globally, the U.S. is a minor producer of aquaculture products, ranking 15th in a United Nations Food and Agriculture Organization report (FAO 2014). It would be beneficial to expand aquaculture in the U.S. as approximately 91% of seafood (by value) consumed in the U.S. originates overseas. Roughly half of this comes from aquaculture and has driven the U.S. seafood trade deficit to over \$11.2 billion annually (NOAA 2016). By passing the National Aquaculture Act of 1980 (and subsequent amendments), Congress put forth that it was in the national interest and the national policy to encourage the development and reduce regulations of aquaculture in the U.S. However, the past 37 years has not changed anything. The US still is only producing about 1% of the annual global production.

In the early 1990s North Carolina was one of several states to impose a 6-inch minimum size limit in part to protect elvers/glass eels for local aquaculture while awaiting recommendations on glass eel/elver fishery development that was expected in the Atlantic States Marine Fisheries Commission fishery management plan for American eel (ASMFC 2000). The April 2000 American eel FMP (Report #36) also shows that the states of New York, Rhode Island, Delaware, Maryland and PRFC also took the same measure to protect aquaculture development between 1992 – 1995.

In October 2014, the ASMFC adopted Addendum IV to the Interstate Fishery Management Plan for American Eel (ASMFC 2014);

http://www.asmfc.org/uploads/file//55318062Addendum_IV_American_Eel_oct2014.pdf.

Addendum IV implemented a provision allowing states and jurisdictions to submit an Aquaculture Plan to allow for the limited harvest of American eel glass eels (hereinafter “glass eels”) for use in domestic aquaculture facilities. Specifically, Addendum IV states:

“Under an approved Aquaculture Plan, states and jurisdictions may harvest a maximum of 200 pounds of glass eel annually from within their waters for use in domestic aquaculture facilities provided the state can objectively show the harvest will occur from a watershed that minimally contributes to the spawning stock of American eel. The request shall include: pounds requested; location, method, and dates of harvest; duration of requested harvest; prior approval of any applicable permits; description of the facility, including the capacity of the facility the glass eels will be held, and husbandry methods; description of the markets the eels will be distributed to; monitoring program to ensure harvest is not exceeded; and adequate enforcement capabilities and penalties for violations.”

Pursuant to Addendum IV to the Interstate Fishery Management Plan for American Eel, the North Carolina Division of Marine Fisheries (NCDMF) is submitting the following Aquaculture Plan for approval. The NCDMF has selected tributaries in watersheds where the state can objectively show American eels in these areas minimally contribute to the spawning stock of American eel. Only one aquaculture operation, the American Eel Farm (AEF), has requested to be included in the Aquaculture Plan for consideration.

POUNDS REQUESTED

North Carolina requests to harvest 200 lb. of glass eels, the maximum amount allowed under the Aquaculture Plan provision of Addendum IV to the Interstate Fishery Management Plan for American Eel.

DATES OF HARVEST

Glass eels shall be harvested from January 1, through May 30, annually or until 200 lb. of glass eels are harvested, whichever occurs first.

DURATION OF HARVEST

The duration of harvest requested is for a two (2) three (3) year period. A renewal plan will be submitted by June 1, 2019 2020 and at that time additional harvest years will be requested along with any modifications deemed necessary to ensure the success and continued approval of the plan.

METHOD OF HARVEST

NCDMF will limit the number of individuals authorized to harvest under this plan (3 individuals). Glass eels shall be harvested using either fyke nets, dip nets or Irish eel ladders. Fyke nets shall be constructed as follows:

- Shall be thirty (30) feet or less in length from cod end to either wing tip (net length equals the wing length plus the distance from throat to cod end)
- Shall be fitted with netting that measures 1/8-inch bar mesh or less
- Shall contain a ½-inch or less bar mesh excluder panel that covers the entrance of the net
- Shall have no more than two funnels, one cod end, and two wings

Dip nets shall be constructed as follows:

- Shall be no more than 30 inches wide at the widest point of the net mouth
- Shall be fitted with netting that measures 1/8-inch bar mesh or less

Irish eel ladders:

- Location and construction shall need final approval

To mitigate the harvest of elvers (fully pigmented eels), all captured eels shall be graded upon capture on the water using a 1/8-inch bar mesh non-stretchable grading screen and any eels that fail to pass through the screen will be immediately returned to the water where captured. Any eels that pass through the screen will be harvested and count toward the 200 lb. annual glass eel harvest limit.

THE CURRENT AND PAST STATUS FOR AQUACULTURE PURPOSES

For more than three or four decades now 100% of our nations' natural resource of glass eels have been exported overseas to the Asian market. With most of these eels being placed in Chinese fish farms for grow out. Products are then made (mostly kabiaki unagi) and sent back to the US increasing our trade deficit. There have been many cases over the years where the FDA has ban eel products due to unapproved growth hormones as well as other unapproved chemicals being found when tested.

American Eel Farm (formally North Carolina Eel Farm) has been the only exception. Throughout the early to the late 2000's glass eels were purchased from Maine fisherman and brought to the farm for grow out. There was a time when the former owner paid just \$60/pound.

Currently, 100% of the glass eels harvested in Maine and South Carolina are exported. No grow out data on any commercial level is being collected. No value-added job opportunities for US employees is realized. No US market being developed.

MINIMAL CONTRIBUTION

While we have no quantitative data on the abundance of glass eels, it could be argued the harvest of 200 lb. of glass eels is limited enough to have a minimal impact on the spawning stock of American eel (see Appendix 1). Natural mortality is thought to be very high during the early life stages (leptocephalus, glass eel, and elver) due to the high fecundity of American eel (ASMFC 2000, 2012). Assuming a mortality rate of ~97-98%, of the 200 lb. of glass eels proposed to be harvested, approximately 195 lb. would otherwise perish naturally in the wild.

The American eel has a broad geographic distribution range from the Caribbean to Canada. And is found in many US interior states as well. It is well known that there is no successful commercial hatchery on the planet for the *Anguilla rostrata*. It is also accepted by the scientific community that the species dates well back in history and has the characteristic of panmixia (*Conclusive evidence for panmixia in the American eel, Cote*). *Anguilla rostrata's* panmictic population allows for all individuals to be a potential partner. This provides for a very large single biomass spanning along the entire eastern seaboard of the US.

ATLANTIC SEABOARD WATERSHED

The **Atlantic seaboard watershed** is a watershed of North America along both:

- The Atlantic Canada (Maritimes) coast south of the Gulf of Saint Lawrence Watershed, and
- The East Coast of the United States north of the watershed of the Okeechobee Waterway. The relatively narrow continental area is demarcated on the south by drainage to the Okeechobee Waterway (which drains both westward to the Gulf and eastward to ocean), the Eastern Continental Divide (ECD) to the west, and the Saint Lawrence divide to the north. US physiographic regions of this watershed are the Atlantic Plain and the Appalachian Mountains & Highlands. Major sub-watersheds of the Atlantic Seaboard are the following (north-to-south):

Sub-watersheds adjacent to the Saint Lawrence divide

- Chedabucto Bay: 2,148 square miles (5,560 km²)

- Gulf of Maine: 69,115 square miles (179,010 km²)
- Long Island Sound: 16,246 square miles (42,080 km²)
- Lower New York Bay: >14,000 square miles (36,000 km²)

Other notable sub-watersheds

- Delaware Bay: 14,119 square miles (36,570 km²) — larger than several, but not adjacent to either divide
- Chesapeake Bay: 64,299 square miles (166,530 km²) — adjacent to both divides (at the Triple Divide point)

Sub-watersheds adjacent to the Eastern Continental Divide

- Albemarle Sound: >14,380 square miles (37,200 km²)
- Winyah Bay: >7,221 square miles (18,700 km²)
- Santee River: >4,531 square miles (11,740 km²)
- Savannah River: 9,850 square miles (25,500 km²)
- St. Johns River: 8,840 square miles (22,900 km²)
- Biscayne Bay: >2,800 square miles (7,300 km²)
- Kissimmee River: >3,000 square miles (7,800 km²)

The catch data of the American eel shows that the majority of wild caught adults come from the Chesapeake Bay and the Delaware Bay water basins. The figure is about 800,000 pounds per year from both. Catch data also reflects that the overwhelming majority of glass eels are harvested in Maine from the Gulf of Maine watershed. Any harvesting in the North Carolina watershed of Albemarle Sound for glass eels would clearly have little impact on the massive biomass migrating along the eastern seaboard with help from the Gulf Stream and Labrador Currents.

Additionally, it is understood that the voting members of ASMFC took into consideration that all states may have applications for an aquaculture quota and included that language in Addendum IV. That would be a total of 2,800 pounds harvested from the biomass migrating out of the Sargasso Sea. In the past three years there has only been an aquaculture plan submitted by the state of North Carolina. Primarily due to the ideal conditions for aquaculture that exist in the southeast and specifically the state of North Carolina.

LOCATION OF HARVEST

North Carolina's internal waters are classified as either inland, joint or coastal fishing waters. The North Carolina Marine Fisheries Commission (NCMFC) and NCDMF have jurisdiction of coastal waters while the North Carolina Wildlife Resources Commission (NCWRC) has jurisdiction of inland waters and both agencies (NCWRC and NCMFC/NCDMF) have authority within joint waters. Other than a few specific regulations, none of which pertain to American eel, commercial activities and recreational activities using commercial gear (devices) occurring in joint waters is under the jurisdiction of the NCMFC/NCDMF. For the purposes of this plan, all glass eel harvest will be restricted to either coastal or joint waters.

GLASS EEL HARVEST SITES

- 1.) Albemarle Sound and tributaries
- 2.) Pamlico Sound and tributaries
- 3.) Newport River and tributaries

4.) North River and tributaries

NCDMF MONITORING PROGRAM

In addition to Aquaculture Operations/Collection General Permit Conditions in rule (NCMFC Rule 15A NCAC 03O .0502) and Aquaculture Operations/Collection Specific Permit Conditions (NCMFC Rule 15A NCAC 03O .0503F), to monitor and regulate the harvest of glass eels, the NCDMF will issue an Aquaculture Collection Permit (ACP) to the AEF with additional permit conditions specific to the N.C. Aquaculture Plan that only apply while engaged in glass eel harvest (ACP) or grow out (AOP) activities authorized under the N.C. Aquaculture Plan for American Eel. To aid in monitoring and enforcement the NCDMF will limit the number of individuals authorized to harvest under the ACP (3 individuals). The permittee listed on the ACP must possess a valid North Carolina Standard Commercial Fishing License (SCFL) or Retired Standard Commercial Fishing License (RSCFL) issued by the NCDMF. The permittee listed on the ACP shall provide names and licensing data for all designees in the harvest of glass eels. Any vessels used for glass eel harvest under the ACP shall have a valid North Carolina Commercial Fishing Vessel Registration (CFVR) issued by the NCDMF. Restrictions will be placed on the ACP requiring certain conditions and procedures to be followed, such as:

GENERAL CONDITIONS

- Glass eels harvested from N.C. coastal fishing waters shall not be exported or sold until they reach the minimum legal size of nine inches total length.
- No more than one (1) permittee and two (2) designees shall be authorized to harvest under the ACP
- No more than two (2) mates will be allowed to assist the permittee or designees while fishing for glass eels
- The permittee/designee(s) and any vessel participating in the glass eel harvest must be properly licensed by the NCDMF and abide by all fisheries rules and permit conditions
- Fyke nets, dip nets, and Irish eel ladders are the only gear authorized to use for glass eel harvest under the ACP
- No more than thirty (30) fyke nets and/or dip nets and/or Irish eel ladders in any combination may be fished by the permittee/designee(s) under the ACP
- A fyke net may not be placed within fifty (50) feet of any part of another fyke net
- ~~All gear shall be removed from the water from 12:01 pm on Friday through 12:01 pm on Sunday. This creates a 48-hour rest period to allow glass eels to migrate up these smaller systems to help minimize the impact to the spawning stock.~~
- January 1 through May 30, fyke and dip nets for glass eel harvest may be fished at all hours during the week. Fyke nets may have their cod ends closed during the day, however from 12:01 pm on Friday through 12:01 pm on Sunday fyke nets may remain in the water but the terminal portion of a fyke net cod end shall contain a rigid device with an opening not less than three (3) inches in diameter and not exceeding eight (8) inches in length that is not obstructed by any other portion of the net and dip nets may not be used. This creates a 48-hour rest period to allow glass eels to migrate up these smaller systems to help minimize the impact to the spawning stock.
- Immediately report to NCDMF if a net is tampered with and location of the net and the date and time it was noticed

- Report to NCDMF when each fyke net is removed from the water. If a net is moved, the new coordinates must be reported once the net is reset. If multiple nets are moved the same day, coordinates may be provided once all the nets have been reset. If a net(s) is removed and not reset, it must be reported upon returning to the landing site.
- Purchased American eels (glass eels, elvers, or yellow eels) shall be kept separate from eels that were harvested as glass eels within N.C. and grown out to yellow eels
- All gear and harvest restrictions detailed in the Method of Harvest section will be listed as conditions under the ACP
- Catch per unit effort (CPUE) data will be collected for each piece of gear. Information collected will include: approximate time the gear began and ending fishing and the number of glass eels harvested. All CPUE data will be reported to the eel biologist by the 10th of the following month.

BEFORE HARVEST

Fishermen harvesting glass eels under the ACP shall call-in to NCDMF the following information:

- Daily:
 - Landing site they will be leaving from and returning to once fishing activity is complete
 - Names of individual(s) involved shall be reported at the beginning of the season and any changes or additions would be immediately reported.
 - Number of fyke nets, dip nets, and Irish eel ramps that will be used
 - Description and registration number of the boat(s) to be used for harvest shall require a one time and report and if any changes occur they would need to be reported
 - Description and license plate number of the vehicle(s) to be used for harvest shall require a one time and report and if any changes occur they would need to be reported

DURING HARVEST

- Require the use of a 1/8-inch bar mesh non-stretchable mesh grading screen to cull the glass eels at the harvest site to limit the harvest of elvers

AFTER HARVEST

- GPS coordinates of each net once they are set, if multiple nets are set the same day, coordinates can be provided once all the nets have been set.
- Require AEF to hold all glass eels that perish during transport to the facility and all eels that perish in the facility for inspection
- All glass eels that perish during transport will count against the 200 lb. harvest limit
- Require AEF to call-in or email to NCDMF by 5:00 pm each day the total harvest for the previous day in pounds to the nearest 0.1 lb. of glass eels received (including those days when no glass eel harvest occurred). Zero pounds shall only be reported if no glass eels are harvested and received.

The above conditions and procedures will allow the NCDMF to limit the effort (amount of gear and number of individuals) involved in glass eel harvest under the Aquaculture Plan. These controls will allow the NCDMF to ensure the glass eel harvest does not exceed what is authorized in the Aquaculture Plan. Any harvest that exceeds the 200 lb. harvest limit shall be immediately returned to the water where captured.

ENFORCEMENT CAPABILITIES AND PENALTIES FOR VIOLATIONS

Violations of the ACP permit conditions will be addressed according to the NCDMF SOP for Permit Violations and suspensions will be carried out in accordance with NCMFC Rule 15A NCAC 03O .0504 (see Appendix II).

All charges for violations will be charged under N.C. General Statute § 113-187 (d) (4): Violating the provisions of a special permit or gear license issued by the Department. All fines will be at the discretion of the court; however, fines may not always be levied for the first offense.

The call-in requirements under the Monitoring Program section will allow enforcement officers to know when and where lawful harvest is occurring. It will also allow for random inspections to take place at the harvest and landing sites to ensure the conditions of the permit and all applicable NCMFC rules and regulations are being followed. Random inspections will also be performed at the aquaculture facility to ensure the proper records are being kept to account for all eels in the facility as required under N.C. General Statute § 113-170.3 and NCMFC Rule 15A NCAC 03O .0502 (8) (see Appendix III).

SIZE LIMIT EXEMPTION

The intent is to raise the eels as close as possible to the legal minimum size of 9 inches total length prior to sale. Given the difficulty in measuring live eels, prior to sale, all eels shall be graded using a ½-inch by ½-inch non-stretchable mesh grading screen. Any eels that do not pass through the grading screen may be sold and any that pass through the grading screen shall remain in the possession of the AEF until such time as the eels are large enough to not pass through the grading screen. On inspection, a 10% tolerance by number will be allowed for eels that pass through the grading screen.

PRIOR APPROVAL OF PERMITS

The AEF has all necessary permit approvals in place with the exception of an Aquaculture Collection Permit from the NCDMF. This permit will be issued upon approval of the Aquaculture Plan by the ASMFC American Eel Management Board. The permits currently held by the AEF are:

- North Carolina Department of Agriculture Aquaculture Operation Permit valid until 2017
- North Carolina Division of Marine Fisheries Aquaculture Operation Permit renewed annually. To be eligible for an ACP, an Aquaculture Operation Permit is required (see Appendix IV: NC Marine Fisheries Commission (NCMFC) Rule 15A NCAC 03O .0501 (e))
- North Carolina Division of Marine Fisheries Standard Commercial Fishing License

- North Carolina Division of Marine Fisheries Dealer License

As noted in NCMFC Rule 15A NCAC 03O .0501 the appropriate licenses from the Division of Marine Fisheries must be held by the permittee. A North Carolina Standard Commercial Fishing license is required to fish commercial gear such as fyke nets, a Commercial Fishing Vessel Registration (CFVR) is required for vessels used to harvest seafood and a Dealer License is required to sell fish taken from the coastal fishing waters.

DESCRIPTION OF THE MARKET

The AEF indicated they have identified clients for food and bait markets domestically as well as overseas. The long-term intent is to develop and expand the US domestic market as much as possible. For proprietary business reasons, specific details were not provided.

DESCRIPTION OF THE FACILITY

**American Eel Farm
1633 NC HWY 41 West
Trenton, NC 28585**

History, Design, Capacities and Technical Facts

The AEF, located in Trenton, North Carolina, is a state-of-the-art Recirculated Aquaculture System (RAS) which has been operating since 2003

Below are two You Tube links that show videos of the facility:

<https://www.youtube.com/watch?v=4YnQn7aivw4>

<https://www.youtube.com/watch?v=1wUiwzmzO-TI>

It is a proven Danish system designed overseas by Inter-Aqua Advance for eel grow-out and imported to the US by William Bokolar and Marty Bouw to US into the state of VA. The state of VA granted an 800 kilogram harvester permit for glass eels in 1999 as outlined in the ASMFC American eel April 2000 FMP Report #36 for this facility.

The AEF was initially operated in North Carolina as the North Carolina Eel Farm (corporate filing date May 21, 2002). It was purchased from the original owners by George Koonce and transported to Jones County. The original location suffered a hurricane and was moved to its current location. The facility has a 15-year operation history in North Carolina. There is no other facility specifically designed to grow out glass eels to yellow eels at a commercial level in the US. The facility has the capacity to easily grow-out in excess of 900 pounds of glass eels. There is historical proprietary data on a large scale commercial level that no current fish farm, University, or government agency in the US can match.

The facility has three separate closed recirculating systems. The two main systems are identical RAS units each containing twelve (12) 1,000 gallon tanks and independent water treatment systems for both RAS units. Each RAS contains twelve (12) raceway tanks with 900 US usable gallons. Water is purified, restructured and super oxygenated.

Raceway Tanks

Each section contains 12 raceway tanks. The facility has two separate treatment sections and 2 large 10,000 gal temporary storage tanks with filtration and aeration. Each raceway tank is equipped with a fine screen outlet complete with a tertiary motorized brush system, to keep the mesh clean. In each tank, there are also level switches that give alarm for high water level. These large rectangular fiberglass tanks hold about 1,000 gallons of water. Here is the home of the eels while we are their stewards.

Each tank is outfitted with aeration provided by large Sweetwater pumps and back-up emergency oxygen lines which automatically activate in case of a power outage. Each tank also can be isolated from the system and individually cleaned if necessary without draining entire system.

There are three automatic feeders for the first three tanks that are ideal for the small eels. As they are graded the larger eels can be fed by hand or additional automatic feeders can be installed.

Monitoring Systems

There is a new Pacific Oxyguard water quality monitoring system that monitors pH, oxygen saturation levels, water levels and temperature. The system can send alarms remotely and is programmed to call to a farm manager's cell phone as well as four other programmed numbers if any levels drop or change as per settings logged into system. The system can be expanded by adding more test probes and programming if desired.

This system design is based on proven *Anguilla anguilla*, *A. mossambica*, *A. bicolor* and *A. marmorata* aquaculture techniques. The systems are technically sound, energy efficient, and easy to operate. The system has been successful with American eels as proven by recorded growth rates, low food conversions and low incidence of disease and mortality.

Mechanical Filtration

Attached to those 24 tanks is a complete water treatment unit equipped with a HydroTech drum filter type 803 / 40 micron mechanical filtration unit. This unit has a max flow of 31,500 gal/hour or 63,000 gal/hour if both sections are in operation. The two drum filters sieve feces and other large particles out of the water. The filters are continuously sprayed (adjustable timing possible) with water to self-clean. The waste water runoff from this event drains into a small channel within the drum filter and then drains into a system pipe which gravity feeds into the main channel in the tank room that runs the full distance from tank #1 to tank #24 where the waste water is then pumped into a small settling pond on the property by a sump pump through a 12" PVC drain pipe.

Biological Filtration

After mechanical filtration, water is gravity fed into 2 parallel 18 foot tall silos (four total for both sections) with patented Inter Aqua Advance (IAA) A/S Moving Bed Bio Reactor (MBBR) technology for biological treatment of the water (removal of ammonia and dissolved organic matter). Each silo has a volume of 1,300 gallons and is 55 % filled with IAA bio-curler bio media. This technology is superior to simple trickling filter bioreactors in that the attached

blower motors run constantly to keep the media moving. This also acts as a self-cleaning process within the silos and contributes to the CO₂ stripping process. Nitrifying bacteria create a film on the media and converts ammonia to a nitrate. Safe for the fish and excellent for growing plants! Two steps: $\text{NH}_3 + \text{O}_2 \rightarrow \text{NO}_2^- + 3\text{H}^+ + 2\text{e}^-$, $\text{NH}_3 + \text{O}_2 + 2\text{H}^+ + 2\text{e}^- \rightarrow \text{NH}_2\text{OH} + \text{H}_2\text{O}$.

With an optimum temperature for the growth of the eel at 24 degree C. or 74 degree F. The water treatment unit will be able to handle up to 250 lb. dry feed per day per section (500 lb. per day total). After the MBBR water flows by gravity into a common pump sump.

The water can be circulated with 3 separate pumps (per section, 6 pumps total), one 3 HP Low Head main pump and two 3 HP medium pressure pumps with 20 psi into two oxygen-cones (per section 4 total) for supersaturating of liquid oxygen into the water. In total the 3 pumps give a minimum flow capacity of 31,500 gal/hour (63,000 gal/hour total).

CO₂ Stripper

There is a carbon dioxide stripper for tanks #1 - #24 which has counter flow packed tower technology and utilizes structured packing of vacuum formed sheets of PVC. These packing's will provide maximum wettability, thereby maximizing the stripping effort.

Ultraviolet Lighting (UV)

Water flows through the center of a cylindrical housing. The water passes through the device and the UV lighting assists in disinfecting the water by destabilizing the DNA of germicidal bacteria. The water is surrounded by UV bulbs in special waterproof housings. The DNA in the bacteria is "blown-up". The UV system has recently had the bulbs updated. However there have been reports that a UV disinfection system is not needed with eels so this system may be reconsidered.

Super Oxygenation

The water is injected through a top mount opening into 10 foot tall Oxygen cones (4 total). As it spills into the pool below a vortex is created and splashing occurs. The water is restructured as bubbles are produced. Liquid Oxygen is injected into these bubbles under 20 PSI pressure ($PV=nPT$). There is a back-up liquid oxygen system tied into the main oxygen source with two air stones per raceway as a safety net. It is serviced simply by attaching the flow meter to a large liquid oxygen tanks. Should there be the need, the main liquid oxygen source would back feed the 26 tanks with 150 PSI automatically.

Water Supply

The system is supported by three deep water wells all of which are operable and are wired with three phase wiring for better conservation as well as on independent breakers so as to always allow for a water source to be actively supplying water. One is about 300' deep and the other two about 200'. Jones County is part of the North Atlantic Coastal Plain aquifer. And is conveniently located where the Castle Hayne, Pee Dee and Black Creek aquifers intersect. Additionally, there is public water tied into the facility.

Water Softening System

There is a large commercial grade water softening system that all water passes through prior to entering any portion of the facility. The purpose is to change the molecular structure of the Ferrous Iron from the ground water to prevent it from becoming Ferric Iron once oxidized. The rust colored sediment that can cause operating issues.

Valve System

The facility has many valves which assist in directing water flow. Also enables the operator to isolate any section, component or well source.

There is 440 electric service at pole. There is a heating system that can heat the water entering from the wells prior to entering the main water source if needed by passing heated water through several tubes mounted in the well reserve tanks for both sections. These well reserve tanks are equipped with automated on/off valves allowing water to be called automatically from the well when the water level reaches a preset level.

The water is distributed back to the raceway tanks via a common pipe manifold situated on the wall at the end of the tanks, with a separate valve to each tank for maintenance. A flow rate of 31,500 gal/hour (per system or 63,000 gal/hour total) will give an exchange rate of 3 to 5 times/hour to maintain self-cleaning and an adequate oxygen level in the raceway.

There is a third system which has two large 9,000 gallon tanks supported by similar filtration, aeration and small bio-reactors. This system is separate from the other two. Total capacity for AEF is about 50,000 gallons with about 40,000 being usable. Additionally, there is plenty of room to expand on the flat 2-acre site on which the facility is located. With 226 days a year of sun and a mean annual temperature of 70 degrees there is also a great opportunity to develop a medium to large scale aquaponics system on site.

In addition to the main tank room and the state-of-the-art water treatment room there is a main office area, sales office area, employee dining, a furnished residential area, a full bathroom with laundry, a feed room, packaging room, a mechanical room, an electrical room, storage rooms and two large covered exterior areas one @ 15' X 85' and the other @ 15' X 50'. The grounds are gated and there is a security system with 16 infrared cameras capable of being viewed remotely. The facility has cable connections for internet and TV as well as two satellites for backup. The steel building construction is insulated with pressed foam to help minimize temperature fluctuations on hot or cool days. The roof was replaced with a steel roof about six years ago. There is a heating system but it is not necessary to use when system is running due to local climate and the ground water temp of 68 degrees.

With the general geographic location being the Southeast USA along with the well-insulated building the water temperature for maximum growth rate could be efficiently maintained. Trenton, NC has a climate that is very suitable to aquaculture/agriculture in general. The annual average mean temperature is 70 degrees where the ideal temp for grow-out of eels is 74 degrees. There is no snow fall (very rare) and few days below freezing (very rare).

Eel Grow Out

Eels can be stocked in high densities in the raceway tanks. Stocking densities of 300 kg/m³ or 2(+)
lb./gal are often seen in eel farms. It is estimated that juvenile eels have an oxygen

demand of 300 mg/kg/hour. The liquid oxygen system at the AEF is sufficient to reduce mortality and sustain eels in high densities. Estimated grow out time from the glass eel phase to 9 inches averages around 210 days. Individual eels grow at different rates so total grow out time will be longer. Due to the varying growth rates, it is estimated that one-third of the eels will be harvested in 5 - 7 months, another group will be harvested at 8 - 10 months, and the rest will be harvested at 11 - 12 months after harvest.

A large mobile stainless-steel grading machine in the main tank room will be used to grade the eels every four to six weeks. A well-managed RAS eel farm can expect a weaning rate of 80 - 90%. Eels feed ratio is greater than 1:1 in most studies depending on the amount of protein in the feed. There are studies in Japan and China that show a faster grow out however this outline is one the AEF is comfortable with.

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FIGURES

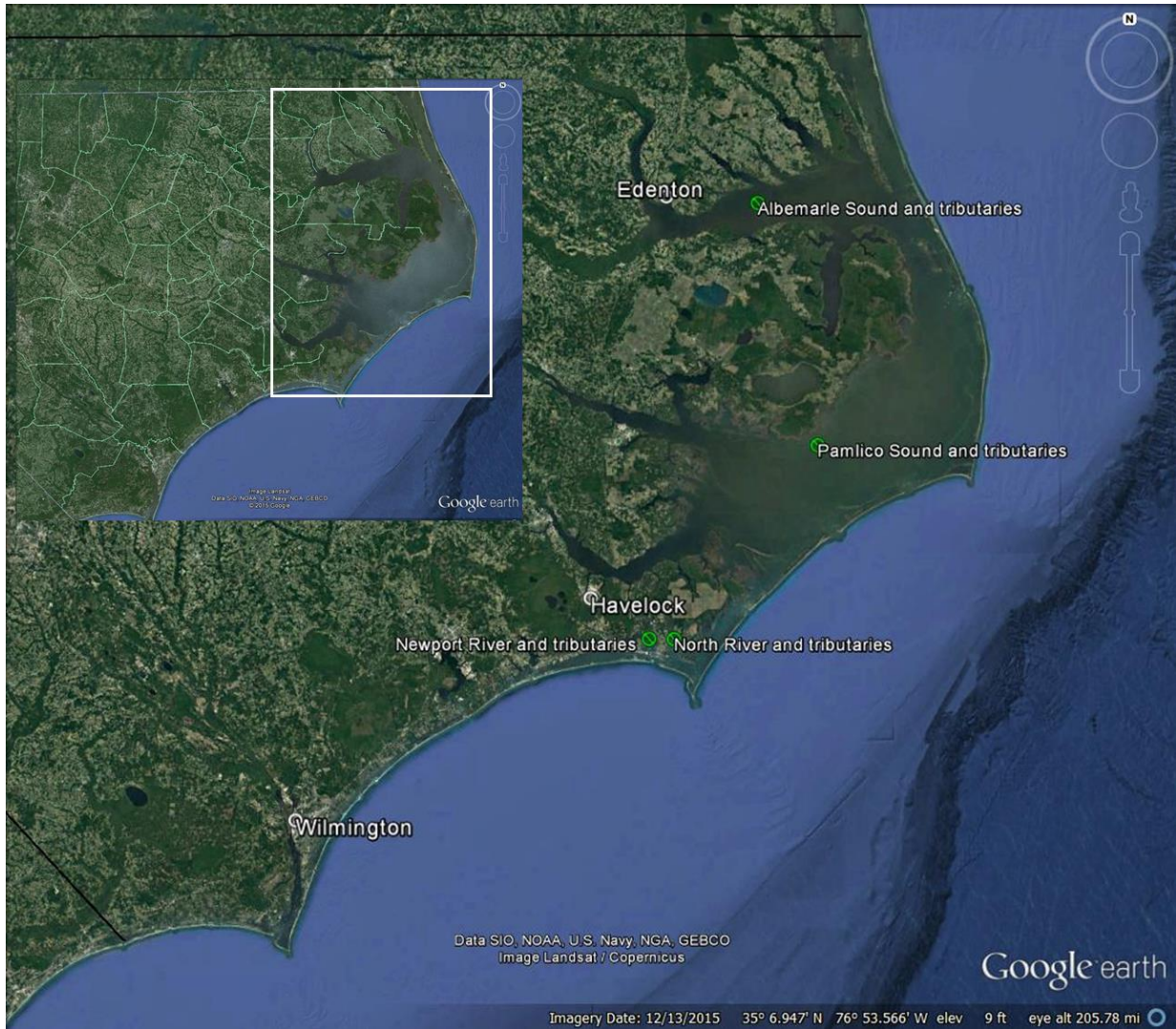


Figure 1. General location of proposed harvest areas (green circles) along the North Carolina coast.

APPENDIX I

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p. 1

TESTIMONY PRESENTED TO THE COMMITTEE ON MARINE RESOURCES
RE: H.P. 137, AN ACT TO RESTRICT THE TAKING OF EELS LESS THAN 6
INCHES IN LENGTH FROM MAINE COASTAL WATERS (EMERGENCY)

by
James D. McCleave
February 23, 1995

INTRODUCTION

The purpose of my testimony is primarily to educate the members of the committee, other legislators and interested persons about the unique life cycle of a truly fascinating and somewhat mysterious fish, the American eel. The unusual life cycle has some important implications for management and conservation of this species, which are different than for most species of fishes. I will present several of these implications. Finally, I do offer an opinion on the soundness of this particular bill.

I am a Professor of Oceanography and a Cooperating Professor of Zoology at the University of Maine, where I have been since 1968. I have conducted research on the biology of the American eel and the European eel since the early 1970s and have published more than 25 scientific papers on them. I also teach about eels in my classes at the University, and I occasionally have participated in workshops on eels with my European colleagues. A copy of my résumé is appended.

I offer this testimony as a friend of the eel, an awesome fish, and as a friend of eel fishers of all types. It is not my intention to support one group of harvesters over another. My conclusions and opinions are biologically based. The economics of the eel fishing and aquaculture industries and the economic consequences of management decisions are left to the realm of other experts.

LIFE CYCLE OF THE AMERICAN EEL

American eels are highly migratory, with spawning and larval development occurring in the ocean, and feeding and growth occurring in estuaries and fresh waters (rivers, streams, ponds, and lakes) [catadromous life cycle].¹ Spawning occurs near the surface over very deep water in a large area of the Sargasso Sea (Figure 1) and only there, meaning there is a single breeding population for the species. The Sargasso Sea is a large portion of the western North Atlantic Ocean east of the Bahamas and south of Bermuda. Spawning occurs in winter. Eggs hatch in a day or two in the warm water, releasing a long-lived larval stage [leptocephalus], which is flattened from side-to-side and shaped somewhat like a willow leaf. The leptocephali drift and swim in the upper few hundred feet of the

How do we know this?

¹My language is intended to be understood by the nonspecialist. However, the appropriate scientific terms are included in brackets for completeness and to allow direct reference later in the document.

ocean for several months, growing slowly to a length of 2-2.5 inches. The leptocephali dramatically alter their shape [metamorphose] to resemble a miniature, transparent eel, called a glass eel, during the subsequent autumn and winter. This metamorphosis occurs at sea, perhaps near the edge of the continental shelf. The glass eels enter estuaries and ascend rivers during winter and spring, earlier at the southern end of their range, later at the northern end. (My research group at the University of Maine has contributed substantially to this knowledge.) It is during the spring ascent that glass eels, sometimes termed elvers, are harvested commercially in Maine.

The glass eels in estuaries and fresh waters rapidly develop rather drab pigmentation in their skin, dark on the back and often yellowish on the belly, leading to the name yellow eel for this stage. Growth is generally slow, and yellow eels spend several years in estuaries and inland waters. Growth and age at maturity are not well known. Males probably remain as yellow eels for 4-6 years or more, and grow to about 12-18 inches or so. Females remain as yellow eels for many more years, probably 6-20 years in New England and the Maritime Provinces. During this growth period, yellow eels are fished commercially in estuarine and fresh waters, using baited traps or pots.

During late summer and early autumn, maturing yellow eels undergo a second metamorphosis in preparation for a migration to sea to spawn. The pigment on the belly frequently becomes an iridescent silvery, leading to the term silver eel. Silver eels migrate from fresh waters and estuaries to sea in late summer and autumn in the northern part of their range, including Maine, and later in the southern part of the range. During this migration in Maine, silver eels are fished commercially in fixed weirs or nets set across streams and rivers.

Silver eels migrate to the Sargasso Sea, *spawn once and die*. Little is known of this migration or actual spawning, but it seems likely that autumn migrants are the spawners of the subsequent winter. Evidence of the timing and location of spawning comes from the distribution in space and time of small leptocephali. (My research group at the University of Maine has contributed substantially to this knowledge.)

The yellow stage of the American eel ranges from the eastern Gulf of Mexico, all along the east coast of the US, through the states and provinces bordering the Gulf of Maine, to the states and provinces bordering the Gulf of St. Lawrence, to Newfoundland and Labrador. Yet all spawning of the resulting silver eels occurs in the Sargasso Sea.

POINTS OF EMPHASIS FROM THE LIFE CYCLE

- There is a single breeding population for the entire species regardless of where the yellow eels resided [panmixis]. All genetic evidence suggests that a female from Maine is as likely to spawn with a male from Georgia as with a male from Nova Scotia.
 - ◊ This means there is no 'homing' of offspring from eels of the Penobscot or Kennebec Rivers to those rivers.

- Glass eels entering the Maine rivers are just the same genetically as those entering elsewhere within the range.
- There is a single spawning by a female in her lifetime [semelparity]. An adult female may have to grow for 15 years before reaching maturity and spawning *once*.
- Females develop large numbers of eggs [high fecundity], probably 400,000-3,000,000 eggs per female increasing with female size.
- Nearly all the eggs produced by a female and fertilized by a male will die before reaching maturity [high mortality]. This is natural in fecund species; otherwise the earth would be covered with eels.
- Females are much larger at sexual maturity than males [sexual dimorphism].
 - Most females are larger than 20 inches (50 cm) at maturity.
 - Most males are less than 18 inches (45 cm) at maturity.
- Determination of whether an eel becomes a male or female is not completely under genetic (chromosomal) control, but the process of sexual determination is not fully understood.

HYPOTHESES RELEVANT TO CONSERVATION

There are two hypotheses, for which there is some scientific evidence, which are important to decisions on conservation of the species. Both hypotheses follow logically from an overriding hypothesis that eels encountering more productive waters have a greater tendency to become males, while those encountering less productive waters have a greater tendency to become females. (There is a body of life history theory that supports this different life history strategy for males and females.)

- There is a gradual increase in the proportion of eels that become females from the estuary toward the headwater streams, i.e. increasing up a given drainage. Within a river drainage, more productive waters are generally found in the lower reaches, especially the estuary.
 - If correct, this means that Merrymeeting Bay has a lower proportion of females than the higher waters of the Kennebec River.
- There is a gradual increase in the proportion of eels that become females from the southern part of the range to the northern part of the range [a cline]. Along the range of the eel, more productive waters are generally found to the south, less productive waters to the north, including Maine.

- If correct, this means that Maine is likely to have a greater proportion of female eels within its population than, say, Georgia.

MY OPINION ON EEL MANAGEMENT-CONSERVATION

Because of the wide range of the species, and because the species is a single breeding population, one political jurisdiction alone cannot conserve the species. However, Maine can act responsibly from an understanding of the eel's life history.

I will now argue against this bill. The first line of reasoning is on the basis of prudent interpretation of the implications of the life cycle. The second line of reasoning is on the basis of a scenario for interpretation of the high fecundity-high mortality consequences in this species.

From both lines of reasoning, I am led to the conclusion that *there is no biological basis underlying the restriction of harvest proposed by this legislation*. For certain, in my mind, there is *no emergency*. This is not to state that development of sound management and conservation practices are not needed.

IMPLICATIONS FROM THE LIFE CYCLE

In a one-time spawning [semelparous], fecund species with a long lifetime before that one reproduction, prudent conservation strategy would increasingly protect females the closer they get to reproduction. Mortality is high in a fecund species, but the rate of mortality declines exponentially with size. Mortality rate in leptocephali must be enormous; mortality rate in glass eels must be enormous as well. However, mortality rate in females larger than, say, 15 inches is probably very low. (Here I refer to natural mortality, not mortality from people's activities of fishing, damming, polluting, etc.)

Maine, acting in prudent fashion, might choose to protect preferentially maturing females. I stress females because only females produce young. One male may mate with many females, but only females bear eggs.

If the cline in increasing proportion of females from south to north is correct, Maine and the Maritime Provinces might give increased thought to protecting females. A greater proportion of the reproductive potential may be in the northern part of the species' range.

If there is an increasing proportion of females farther up a drainage, it may be prudent to harvest differentially fewer eels farther up drainages.

Weir fisheries, pot fisheries with mesh-size limits, and eel-size limits all shift the harvest toward a greater percentage of females. Because of the sexual dimorphism, the larger the mesh or the larger the size limit, the greater the pressure is transferred to prereproductive females. Further, because females are longer lived than males, greater fishing pressure is transferred to prereproductive females. This is exactly opposite from the desirable effect. It is more logical, if anything, to place a maximum size limit on the harvest of eels. Such a measure

is clearly against conventional wisdom for managing fishes, but this is an unconventional species.

States and provinces that do not allow weir fisheries prudently protect females, whether they know it or not. Only Maine and, to a very limited degree, New York allow weir fisheries for eels.

Likewise, states and provinces that restrict commercial fishing in fresh waters prudently protect females, whether they know it or not. Most states have a substantial or complete restriction on such fishing. Not Maine.

On the other hand, most states and provinces have minimum size limits on commercial eel harvest, generally 4 inches, 6 inches or 8 inches. I do not believe these jurisdictions made those regulations on any basis other than transfer of practices from management of other species, such as trout or bass. In the extreme, Prince Edward Island has a minimum size limit of 18 inches for eels. Other Maritime Provinces are considering similar regulations. This practice would ensure that nearly all harvested eels would be females, a completely counterproductive measure.

Just because other jurisdictions have similar regulation, we should not make the assumption that the regulations have biological basis. Maine should strive gain the information necessary to base regulations in accord with the life cycle of the eel.

IMPLICATIONS FROM MORTALITY RATES

Management of commercial and recreational harvest of fishes (or tolerance of dams and pollution) has always been based on the assumption that there are compensatory mechanisms within the biology of the species, i.e. mechanisms that allow increased survival or increased reproduction of the nonharvested individuals, so the population does not decline. This is the concept of sustainable yield. The key to success of this approach is to understand what the compensatory mechanisms are and when they occur in the life cycle with respect to when harvest occurs.

Again, the eel is unique because of its high-fecundity, high-mortality characteristic. It seems unlikely to me that major compensatory mechanisms are to be found in the oceanic stages of the life cycle. The leptocephali probably have the highest mortality. Food limitation and inability to reach the continental shelf may be the critical factors, neither of which is under control of the leptocephali. Silver eels on migration to the Sargasso Sea to spawn probably have the lowest mortality, and they also have little opportunity for compensating mortality earlier in the life cycle.

In the elver-yellow eel stages, there is high mortality, but there is also the greatest likelihood of compensatory mechanisms for added mortality due to human activities. Because this is the growth phase, competition for food may occur among individual eels, causing starvation or at least slowing the growth. Reduced density of eels *may* result in higher survival, greater growth rate, and perhaps higher fecundity. On the other hand, not all outcomes of reduced density are

predictable. Because the mechanisms of gender determination are not known for eels, reduced density could increase the ratio of females to males (a positive compensatory mechanism) or decrease the ratio of females to males (a negative compensatory effect). However, most density-dependent effects are negative and have positive compensatory mechanisms.

I illustrate the subtle effects of compensatory mechanisms with a *hypothetical* numerical example. For the example, assume an average female has a fecundity of 1,000,000 eggs. Only one female and (less than) one male need to survive from those million eggs and reproduce to maintain a stable population. In the first scenario, I assume there is a compensatory mechanism for harvesting that can occur anytime after harvesting, regardless of when the harvesting occurs. In the second scenario, I assume there is a slightly greater compensatory mechanism in the yellow eel stage (likely, as described above).

- Scenario 1. Minor compensatory mechanism any time.
 - ◊ Fecundity 1,000,000 eggs produced by average female.
 - ◊ Assume 99.9% die at sea as leptocephali, leaving 1,000 glass eels.
 - ◊ Assume 99.2% of those die becoming silver eels, leaving 8 to migrate seaward.
 - ◊ Assume a harvest of half the migrating silver eels (4), leaving 4 migrants.
 - ◊ Assume 50% of those die, leaving 2 successful spawners.
 - ◊ Fecundity 1,000,000 eggs.
 - ◊ 99.9% die as leptocephali, leaving 1,000 glass eels.
 - ◊ Harvest half the migrating glass eels, leaving 500.
 - ◊ 99.2% die before becoming silver eels, leaving 4 to migrate.
 - ◊ 50% of those die leaving 2 successful spawners.
 - ◊ Conclusion: In this scenario, it does not matter when in the life cycle eels are harvested as long as the allowed harvest is set by actual mortality rates, rather than the hypothetical ones used in the examples here. Alternatively, harvest of a combination of life stages is possible, again as long as actual mortality rates are applied.
- Scenario 2. Greater compensatory mechanism in yellow eel stage.
 - ◊ Fecundity 1,000,000 eggs.
 - ◊ 99.9% die as leptocephali, leaving 1,000 glass eels.
 - ◊ Harvest half the migrating glass eels, leaving 500.
 - ◊ Now, if there is compensation such that mortality is reduced in the yellow eels stage by only 1%, 98.2% die before becoming silver eels, leaving 9 to migrate seaward.
 - ◊ Harvest half the migrating silver eels (4 or 5), leaving 4 to migrate.

- ◊ 50% of those die leaving 2 successful spawners.
- ◊ Conclusion: In this scenario, harvest of glass eels has no effect on the harvest of silver eels because of a compensatory mechanism in the yellow eel stage. Again harvest size needs to be determined with actual mortality rates.

CONCLUSIONS

I conclude from the two previous sections that there is no biological basis for assuming that harvest of glass eels *per se* is detrimental to the conservation of the American eel. Under certain conditions, the harvest of glass eels could have less detrimental effect on conservation than harvest of silver eels. Under certain conditions, the harvest of glass eels could occur while having little or no detrimental effect on harvest of silver eels.

I also conclude that the current regulatory structure for eels in the States and Provinces in the eel's range is not based upon sound biological principles. However, unregulated or unsoundly regulated commercial fishing in Maine and other jurisdictions is distinctly unwise. By testifying in opposition to this bill, I am not implying that there is not cause for concern and for possible regulations on commercial fishing for eels.

SCIENTIFIC RECOMMENDATIONS FOR CONSERVATION AND MANAGEMENT

In the short term for decision making in Maine, the following steps are important.

- Mortality rates and sources of mortality in the glass eel, yellow eel and early silver eels stages need to be determined to allow estimates of how much harvest could be allowed in what stages of life without deleterious effect on the stock.
 - ◊ Determine sources and rates of natural mortality, and determine whether there is density-dependent mortality, which involves determination of food-webs and predator-prey relations.
 - ◊ Determine sources and rates of anthropogenic mortality at different stages, which includes fishing mortality and nonfishing mortality (fish passage at dams, pollution, hydroelectric turbines, etc.).
- Fishing mortality needs to be determined from the activities of the fishing industry.
 - ◊ A licensing system for fresh waters and tidal waters specific to commercial fishing for eels should be instituted.
 - ◊ A reporting system for commercial catches by life-cycle stage or gear needs to be associated with the licensing system.

- Growth rates of males and females and fecundity of females of various sizes needs to be determined to allow assesment of harvest practices on the reproductive potential of the migrants that do migrate to sea to spawn.
- The distribution of sex ratio throughout selected drainages needs to be determined to allow assessment of harvest practices on abundance of females and males.

In the long term for decision making over the geographic range of the eel, the following steps are important.

- The mechanism of gender determination in eels needs to be understood, so effects of harvest practice on sex ratios can be determined.
- The distribution of sex ratio over the geographic range needs to be determined, so harvest practice could be adjusted over the range as appropriate to the life cycle.

APPENDIX II

NC Marine Fisheries Commission Rule 15A NCAC 03O .0504:

15A NCAC 03O .0504 SUSPENSION/REVOCAION OF PERMITS

(a) For violation of specific permit conditions (as specified on the permit), permits may be suspended or revoked according to the following schedule:

- (1) violation of one specific condition in a three year period, permit shall be suspended for 10 days;
- (2) violation of two specific conditions in a three year period, permits shall be suspended for 30 days;
- (3) violation of three specific conditions in a three year period, permits shall be revoked for a period not less than six months.

If the permit condition violated is the refusal to provide information upon request by Division staff, either by telephone, in writing or in person, the Fisheries Director may suspend the permit. Such permit may be reinstated 10 days after the requested information is provided.

(b) All permits will be suspended or revoked when the permittee's license privilege has been suspended or revoked as set out in G.S. 113-171. The duration of the suspension or revocation shall be the same as the license suspension or revocation. In the event the person makes application for a new permit during any period of license suspension, no new permit will be issued during the suspension period. In case of revocation of license privileges, the minimum waiting period before application for a new permit to be considered will be six months.

(c) Permit designees shall not be permitted to participate in a permit operation during any period they are under license suspension or revocation.

(d) Upon service of a notice of suspension or revocation of a permit, it is unlawful to fail to surrender any permit so suspended or revoked.

Appendix III

NC General Statute 113-170.3:

G.S. 113-170.3. Record-keeping requirements.

- (a) The Commission may require all licensees under this Article to keep and to exhibit upon the request of an authorized agent of the Department records and accounts as may be necessary to the equitable and efficient administration and enforcement of this Article. In addition, licensees may be required to keep additional information of a statistical nature or relating to location of catch as may be needed to determine conservation policy. Records and accounts required to be kept must be preserved for inspection for not less than three years.
- (b) It is unlawful for any licensee to refuse or to neglect without justifiable excuse to keep records and accounts as may be reasonably required. The Department may distribute forms to licensees to aid in securing compliance with its requirements, or it may inform licensees of requirements in other effective ways such as distributing memoranda and sending agents of the Department to consult with licensees who have been remiss. Detailed forms or descriptions of records, accounts, collection and inspection procedures, and the like that reasonably implement the objectives of this Article need not be embodied in rules of the Commission in order to be validly required.
- (c) The following records collected and compiled by the Department shall not be considered public records within the meaning of Chapter 132 of the General Statutes, but shall be confidential and shall be used only for the equitable and efficient administration and enforcement of this Article or for determining conservation policy, and shall not be disclosed except when required by the order of a court of competent jurisdiction: all records, accounts, and reports that licensees are required by the Commission to make, keep, and exhibit pursuant to the provisions of this section, and all records, accounts, and memoranda compiled by the Department from records, accounts, and reports of licensees and from investigations and inspections, containing data and information concerning the business and operations of licensees reflecting their assets, liabilities, inventories, revenues, and profits; the number, capacity, capability, and type of fishing vessels owned and operated; the type and quantity of fishing gear used; the catch of fish or other seafood by species in numbers, size, weight, quality, and value; the areas in which fishing was engaged in; the location of catch; the time of fishing, number of hauls, and the disposition of the fish and other seafood. The Department may compile statistical information in any aggregate or summary form that does not directly or indirectly disclose the identity of any licensee who is a source of the information, and any compilation of statistical information by the Department shall be a public record open to inspection and examination by any person, and may be disseminated to the public by the Department. (1997-400, s.5.1; 2001-213, s. 2.)

NC Marine Fisheries Commission Rule 15A NCAC 03O .0502:

15A NCAC 03O .0502 PERMIT CONDITIONS; GENERAL

The following conditions apply to all permits issued by the Fisheries Director:

- (1) it is unlawful to operate under the permit except in areas, at times, and under conditions specified on the permit;
- (2) it is unlawful to operate under a permit without having the permit or copy thereof in possession of the permittee or his or her designees at all times of operation and the permit or copy thereof shall be ready at hand for inspection, except for Pound Net Permits;
- (3) it is unlawful to operate under a permit without having a current picture identification in possession and ready at hand for inspection;
- (4) it is unlawful to refuse to allow inspection and sampling of a permitted activity by an agent of the Division;
- (5) it is unlawful to fail to provide complete and accurate information requested by the Division in connection with the permitted activity;
- (6) it is unlawful to hold a permit issued by the Fisheries Director when not eligible to hold any license required as a condition for that permit as stated in 15A NCAC 03O .0501;
- (7) it is unlawful to fail to provide reports within the timeframe required by the specific permit conditions;

- (8) it is unlawful to fail to keep such records and accounts as required by the rules in this Chapter for determination of conservation policy, equitable and efficient administration and enforcement, or promotion of commercial or recreational fisheries;
- (9) it is unlawful to assign or transfer permits issued by the Fisheries Director, except for Pound Net Permits as authorized by 15A NCAC 03J .0504;
- (10) the Fisheries Director, or his agent, may, by conditions of the permit, specify any or all of the following for the permitted purposes:
 - (a) species;
 - (b) quantity or size;
 - (c) time period;
 - (e) location;
 - (d) means and methods;
 - (f) disposition of resources;
 - (g) marking requirements; or
 - (h) harvest conditions.
- (11) unless specifically stated as a condition on the permit, all statutes, rules and proclamations shall apply to the permittee and his or her designees; and
- (12) as a condition of accepting the permit from the Fisheries Director, the permittee agrees to abide by all conditions of the permit and agrees that if specific conditions of the permit, as identified on the permit, are violated or if false information was provided in the application for initial issuance, renewal or transfer, the permit may be suspended or revoked by the Fisheries Director.

APPENDIX IV

NC Marine Fisheries Commission Rule 15A NCAC 03O .0501:

15A NCAC 03O .0501 PROCEDURES AND REQUIREMENTS TO OBTAIN PERMITS

- (a) To obtain any Marine Fisheries permit, the following information is required for proper application from the applicant, a responsible party, or person holding a power of attorney:
- (1) Full name, physical address, mailing address, date of birth, and signature of the applicant on the application. If the applicant is not appearing before a license agent or the designated Division contact, the applicant's signature on the application shall be notarized;
 - (2) Current picture identification of applicant, responsible party, or person holding a power of attorney. Acceptable forms of picture identification are driver's license, North Carolina Identification card issued by the North Carolina Division of Motor Vehicles, military identification card, resident alien card (green card), or passport; or if applying by mail, a copy thereof;
 - (3) Full names and dates of birth of designees of the applicant who will be acting under the requested permit where that type permit requires listing of designees;
 - (4) Certification that the applicant and his designees do not have four or more marine or estuarine resource convictions during the previous three years;
 - (5) For permit applications from business entities:
 - (A) Business Name;
 - (B) Type of Business Entity: Corporation, partnership, or sole proprietorship;
 - (C) Name, address, and phone number of responsible party and other identifying information required by this Subchapter or rules related to a specific permit;
 - (D) For a corporation, current articles of incorporation and a current list of corporate officers when applying for a permit in a corporate name;
 - (E) For a partnership, if the partnership is established by a written partnership agreement, a current copy of such agreement shall be provided when applying for a permit; and
 - (F) For business entities, other than corporations, copies of current assumed name statements if filed and copies of current business privilege tax certificates, if applicable; and
 - (6) Additional information as required for specific permits.
- (b) A permittee shall hold a valid Standard or Retired Standard Commercial Fishing License in order to hold a:
- (1) Pound Net Permit;
 - (2) Permit to Waive the Requirement to Use Turtle Excluder Devices in the Atlantic Ocean; or
 - (3) Atlantic Ocean Striped Bass Commercial Gear Permit.
- (c) A permittee and his designees shall hold a valid Standard or Retired Standard Commercial Fishing License with a Shellfish Endorsement or a Shellfish License in order to hold a:
- (1) Permit to Transplant Prohibited (Polluted) Shellfish;
 - (2) Permit to Transplant Oysters from Seed Oyster Management Areas;
 - (3) Permit to Use Mechanical Methods for Shellfish on Shellfish Leases or Franchises;
 - (4) Permit to Harvest Rangia Clams from Prohibited (Polluted) Areas; or
 - (5) Depuration Permit.
- (d) A permittee shall hold a valid:
- (1) Fish Dealer License in the proper category in order to hold Dealer Permits for Monitoring Fisheries Under a Quota/Allocation for that category; and
 - (2) Standard Commercial Fishing License with a Shellfish Endorsement, Retired Standard Commercial Fishing License with a Shellfish Endorsement or a Shellfish License in order to harvest clams or oysters for depuration.
- (e) Aquaculture Operations/Collection Permits:
- (1) A permittee shall hold a valid Aquaculture Operation Permit issued by the Fisheries Director to hold an Aquaculture Collection Permit.
 - (2) The permittee or designees shall hold appropriate licenses from the Division of Marine Fisheries for the species harvested and the gear used under the Aquaculture Collection Permit.
- (f) Atlantic Ocean Striped Bass Commercial Gear Permit:

- (1) Upon application for an Atlantic Ocean Striped Bass Commercial Gear Permit, a person shall declare one of the following gears for an initial permit and at intervals of three consecutive license years thereafter:
 - (A) gill net;
 - (B) trawl; or
 - (C) beach seine.

For the purpose of this Rule, a “beach seine” is defined as a swipe net constructed of multi-filament or multi-fiber webbing fished from the ocean beach that is deployed from a vessel launched from the ocean beach where the fishing operation takes place.

Gear declarations shall be binding on the permittee for three consecutive license years without regard to subsequent annual permit issuance.
 - (2) A person is not eligible for more than one Atlantic Ocean Striped Bass Commercial Gear Permit regardless of the number of Standard Commercial Fishing Licenses, Retired Standard Commercial Fishing Licenses or assignments held by the person.
- (g) Applications submitted without complete and required information shall not be processed until all required information has been submitted. Incomplete applications shall be returned to the applicant with deficiency in the application so noted.
- (h) A permit shall be issued only after the application has been deemed complete by the Division of Marine Fisheries and the applicant certifies to abide by the permit general and specific conditions established under 15A NCAC 03J .0501, .0505, 03K .0103, .0104, .0107, .0111, .0401, 03O .0502, and .0503 as applicable to the requested permit.
- (i) The Fisheries Director, or his agent may evaluate the following in determining whether to issue, modify, or renew a permit:
- (1) Potential threats to public health or marine and estuarine resources regulated by the Marine Fisheries Commission;
 - (2) Applicant’s demonstration of a valid justification for the permit and a showing of responsibility as determined by the Fisheries Director; and
 - (3) Applicant’s history of habitual fisheries violations evidenced by eight or more violations in 10 years.
- (j) The Division of Marine Fisheries shall notify the applicant in writing of the denial or modification of any permit request and the reasons therefor. The applicant may submit further information, or reasons why the permit should not be denied or modified.
- (k) Permits are valid from the date of issuance through the expiration date printed on the permit. Unless otherwise established by rule, the Fisheries Director may establish the issuance timeframe for specific types and categories of permits based on season, calendar year, or other period based upon the nature of the activity permitted, the duration of the activity, compliance with federal or state fishery management plans or implementing rules, conflicts with other fisheries or gear usage, or seasons for the species involved. The expiration date shall be specified on the permit.
- (l) For permit renewals, the permittee’s signature on the application shall certify all information as true and accurate. Notarization of signature on renewal applications shall not be required.
- (m) For initial or renewal permits, processing time for permits may be up to 30 days unless otherwise specified in this Chapter.
- (n) It is unlawful for a permit holder to fail to notify the Division of Marine Fisheries within 30 days of a change of name or address, in accordance with G.S. 113-169.2.
- (o) It is unlawful for a permit holder to fail to notify the Division of Marine Fisheries of a change of designee prior to use of the permit by that designee.
- (p) Permit applications are available at all Division Offices.



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Atlantic Menhaden Management Board
FROM: Megan Ware, FMP Coordinator
DATE: July 24, 2017
SUBJECT: Staff Memo Regarding Draft Amendment 3

At the August meeting, the Atlantic Menhaden Management Board (Board) will consider approving Draft Amendment 3 for public comment. Presently, the document contains a large number of management alternatives, particularly in regard to the allocation method. Staff is concerned this volume of options may be overwhelming at public hearings and hinder the ability to receive effective public comment. As a result, staff has put together a series of questions for the Board to answer at the upcoming meeting. Following each question, pros and cons of the various management alternatives are discussed. For some options, staff has provided recommendations for the Board to consider. The comments and recommendations presented in this document were developed with a coastwide perspective in mind.

In addition to the questions posed to the Board in this memo, staff encourages the Board to consider streamlining other portions of the document, including options for the allocation timeframes (Tier 4 in Section 4.3.2) indecision clause (Section 4.3.2.1), quota transfers (section 4.3.3), quota rollovers (Section 4.3.4), and incidental catch (Section 4.3.5).

At the end of the memo, staff has prepared tables that show the various allocation percentages translated into pounds, based on the current TAC of 200,000 mt. The intent of these tables is to provide additional information to the Board regarding the allocation options, using the current TAC as an example. It is important to note the pounds in these tables are subject to change depending on the combination of allocation methods chosen and the TAC selected for 2018.

1. Does the Board want to keep all three fixed minimum options: 2% fixed minimum, 1% fixed minimum, and 0.5% fixed minimum?

The fixed minimum allocation method provides a management alternative under which each jurisdiction has the ability, to some degree, to participate in the menhaden fishery; however, it may not be necessary for the document to include all three fixed minimum sub-options (i.e. 0.5%, 1%, 2%). The benefit of the 2% fixed minimum option is it provides each jurisdiction with the greatest minimum level of quota, resulting in growth opportunities for many states. However, this growth opportunity (2% of the current TAC is roughly 8.8 million pounds) is well in excess of what some states have annually landed over the last decade, including New Hampshire, Rhode Island, Connecticut, New York, Delaware, PRFC, South Carolina, Georgia, and Florida. Furthermore, this large growth opportunity would be compensated by significant

reductions in allocation levels for New Jersey and Virginia relative to recent landings. For example, under the 2009-2011 timeframe, Virginia's allocation would be reduced by 25.47%.

The 0.5% and 1% fixed minimum options provide a more moderate base amount of quota to each state. For many states, these percentages are still greater than their current allocation, and may sufficiently allow for a more appropriate growth in their fishery. For reference, 0.5% of the current TAC is roughly 2.2 million pounds and 1% of the current TAC is approximately 4.4 million pounds. In addition, smaller levels of fixed minimum quota result in smaller decreases in allocation for New Jersey and Virginia.

Staff recommends the 2% fixed minimum option be removed from Draft Amendment 3. This recommendation is endorsed by the PDT. Removing this option would eliminate Tables 9a-c in Draft Amendment 3.

2. Does the Board want to keep both fleet-capacity options, including a two-fleet and a three-fleet option?

Draft Amendment 3 includes a fleet-capacity allocation method that divides quota based on historic landings by gear type. An advantage of this method is it can secure quota for various gear types, addressing one of the concerns of the current allocation method. Presently, there are two options under the fleet capacity option: a two-fleet split and a three-fleet split. In addition, there is a sub-option that allows for the small-capacity fleet to be managed under a soft cap. Advantages of a soft cap include relieving the administrative burden on states to implement timely quota monitoring for a small (<6% of total landings) portion of the fishery, minimizing economic impacts on small-scale community fisheries, and providing a method to streamline management of the resource. Draft Amendment 3 includes harvest control measures for gears subject to a soft cap, including a trip limit, a requirement that landings be reported in annual compliance reports, and the ability for the Board to reduce a trip limit or remove a specific gear from the soft cap.

Under the three-fleet option, small-scale gears (i.e. cast nets, pots, hand lines) are separated from the medium-capacity gears (i.e. pound nets, gill nets, fish traps). The benefit of this option is it secures quota for these two distinct categories of gear types. However, given the medium-capacity gears are not subject to a soft cap, it may limit the flexibility provided to these gear types. This is an important fact given the medium-capacity fleet includes many passive gears whose landings are dependent on the abundance and movement of menhaden. In addition, it maintains an administrative burden on states to implement timely quota monitoring on the medium fleet which, between 2012 and 2016, harvested just 5.5% of total landings in the fishery.

The two-fleet option provides a simpler management alternative while still achieving the goals of this allocation method. Specifically, the two-fleet method ensures small scale gears and stationary gears have access to quota, in addition to the large mobile gears. This option would reduce the administrative burden on states with lower menhaden landings by allowing a greater portion of gears to be subject to a soft cap.

Staff recommends the three-fleet option be removed from Draft Amendment 3. Removing this option would eliminate Tables 6a-c and portions of Tables 11c-d.

3. Does the Board want to keep both regional allocation methods, including a three-region and four-region split?

The purpose of a regional allocation approach is to secure quota for different menhaden fisheries along the coast given menhaden migrate seasonally. From a coastwide perspective, regional quotas are most advantageous when combined with the dispositional and/or fleet-capacity allocation methods because they secure quota by gear type and region. Currently, there are options for a three-region and four-region split. An advantage of the four-region split is it separates the South Atlantic fishery from the Chesapeake Bay fishery, which are different in terms of timing and gears used. However, due to confidentiality rules, there are limitations in what allocation percentages can be shown in the draft Amendment for the four-region approach, particularly if a fleet capacity quota is further divided by four regions. Some percentages that result from combining the fleet-capacity quota with a three region approach can be shown but others have to be redacted.

Staff notes that there are large swings in the quota given to regions under this allocation method depending on the timeframe chosen. For example, under the 2012-2016 time period, the Mid-Atlantic region (NY-DE) would be allocated up to 12.90% of the TAC while the New England region (ME-CT) would only be allocated 0.97% of the TAC. In contrast, under the 1985-1995 time period, the Mid-Atlantic region would be allocated only 2.22% (for perspective, NJ alone currently receives 11.19%) of the TAC while the New England region would be allocated 3.82% of the TAC. These large swings in allocation may hinder the ability of the Board to identify a viable outcome, based solely on a regional approach.

Staff recommends that a regional approach only be used in combination with another allocation method (i.e. dispositional quota, fleet-capacity quota) and that a regional approach not be used as the sole method to allocate the menhaden TAC. Pairing down the regional allocation options would remove Tables 11a-b and 12a-b.

4. Does the Board want to include all historic reduction landings in the allocation percentages, or only those of Virginia?

For the timeframes that contain landings prior to 2006, there are sub-options that include all historic reduction landings in the allocation percentages, and sub-options that only include Virginia's reduction landing. The Board needs to make a decision regarding which landings are included in the allocation percentages. Staff does not have a recommendation for this question, but offers the following pros and cons associated with each option. One advantage of including all reduction landings is it accurately reflects historic fisheries in each state. However, including these landings significantly increases a state's allocation, sometimes to a level well-above the state's recent landings history. This is particularly true for the 1985-1995 time period, in which some states, with recent landings of about 1 million pounds annually, would be allocated almost 10% of the TAC (44 million pounds). One advantage of only including VA reduction

landings is it may provide a more accurate reflection of recent fishery performance; however, it may affect future growth opportunities in states that historically had a reduction fishery.

Due to confidentiality rules, there are limitations on the bait and reduction allocation percentages that can be shown when only Virginia's reduction landings are included. This primarily impacts the longer and older timeframes. Given dispositional bait quota can be combined with other allocation methods, this may limit the timeframes available to the Board in these combinations. Importantly, these older and longer time periods result in significantly lower bait allocations relative to current landings, and may not meet the goals and objectives of the Amendment. All timeframes in the dispositional quota allocation are available to the Board if all historic reduction landings are included or if the Board chooses a 30/70 split between the bait and reduction sectors.

5. Does the Board want to accept New York's proposal to re-calibrate their landings given insufficient or non-existent reporting prior to Amendment 2?

New York has submitted a proposal to re-calibrate the state's menhaden landings due to a lack of historic reporting. This proposal was reviewed by the PDT and the report is included in briefing materials. Overall, the PDT supports the re-calibration method used by New York; however, the PDT notes that, in addition to an increase in reporting, an increase in the abundance of menhaden in the Mid-Atlantic could contribute to the higher landings reported by New York. The PDT also notes the proposal sets a precedent and may invite other states with inconsistent reporting to recalibrate their landings. The current timeframe for Amendment 3 does not provide an opportunity for the Board to react to other proposals. Please refer to the PDT memo for further details and information.

Allocation Scenario Examples

Below are a series of tables that show the pounds resulting from each allocation method, assuming a TAC of 200,000 mt. These tables are presented as reference to the Board to help facilitate discussion at the August Board meeting. It is important to note the pounds in these tables are subject to change depending on the combination of allocation methods chosen and the 2018 TAC. Furthermore, a portion of the TAC is not set aside for episodic events or incidental catch. The table numbers match those in Draft Amendment 3.

2a. Dispositional allocation. This table includes all reduction landings.

| | Bait Quota | Reduction Quota |
|--------------------|-------------|-----------------|
| 2009-2011 | 93,359,797 | 347,564,727 |
| 2012-2016 | 109,451,334 | 331,473,190 |
| 1985-2016 | 59,718,466 | 381,206,058 |
| 1985-1995 | 36,690,513 | 404,234,011 |
| Weighted | 62,166,280 | 378,758,244 |
| 30/70 Split | 132,277,357 | 308,647,167 |

2b. Dispositional allocation. This table only includes VA reduction landings. Three time periods are not shown due to confidentiality rules.

| | Bait Quota | Reduction Quota |
|--------------------|-------------|-----------------|
| 2009-2011 | 93,359,797 | 347,564,727 |
| 2012-2016 | 109,451,334 | 331,473,190 |
| 1985-2016 | | |
| 1985-1995 | | |
| Weighted | | |
| 30/70 Split | 132,277,357 | 308,647,167 |

3/4. Allocation Based on TAC Level.

Given the TAC is 200,000 mt (below the baseline of 212,500 mt), allocations are based on jurisdiction landings from 2009-2011. See Table 10.

5a. Two-fleet allocation method. This table includes all historic reduction landings.

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|
| Large Capacity Quota | 424,238,499 | 415,274,422 | 424,033,826 | 423,479,810 | 420,514,968 |
| Small Capacity Quota | 16,686,025 | 25,650,102 | 16,890,698 | 17,444,714 | 20,409,556 |

5b. Two-fleet allocation method. This table only includes VA reduction landings.

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|
| Large Capacity Quota | 424,238,499 | 415,274,422 | 422,553,244 | 421,201,392 | 418,889,218 |
| Small Capacity Quota | 16,686,025 | 25,650,102 | 18,371,280 | 19,723,132 | 22,035,306 |

5c. Bait landings divided into two fleets. These landings represent a combination of the dispositional quota with the fleet-capacity quota. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This bait quota is applied to all timeframes but the allocation differs based on historic fleet landings.

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|----------------------------------|------------|------------|------------|------------|------------|
| Large Capacity Bait Quota | 76,673,772 | 83,801,240 | 43,145,092 | 19,896,982 | 42,307,281 |
| Small Capacity Bait Quota | 16,686,025 | 25,650,094 | 16,573,374 | 16,793,531 | 19,858,999 |

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|----------------------------------|-------------|-------------|------------|------------|------------|
| Large Capacity Bait Quota | 108,635,669 | 101,277,948 | 95,567,069 | 71,732,990 | 90,021,397 |
| Small Capacity Bait Quota | 23,641,688 | 30,999,409 | 36,710,288 | 60,544,367 | 42,255,960 |

6a. Three-fleet allocation method. This table includes all historic reduction landings.

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|------------------------------|-------------|-------------|-------------|-------------|-------------|
| Large Capacity Quota | 424,238,499 | 415,274,422 | 424,033,826 | 423,479,810 | 420,514,968 |
| Medium Capacity Quota | 16,283,469 | 24,502,856 | 16,323,739 | 17,039,606 | 19,736,292 |
| Small Capacity Quota | 402,555 | 1,147,246 | 566,959 | 405,109 | 673,264 |

6b. Three-fleet allocation method. This table only includes VA historic reduction landings.

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|------------------------------|-------------|-------------|-------------|-------------|-------------|
| Large Capacity Quota | 424,238,499 | 415,274,422 | 422,553,244 | 421,201,392 | 418,889,218 |
| Medium Capacity Quota | 16,283,469 | 24,502,856 | 17,754,623 | 19,265,113 | 21,308,413 |
| Small Capacity Quota | 402,555 | 1,147,246 | 616,657 | 458,019 | 726,894 |

6c. Bait landings divided into three fleets. These landings represent a combination of the dispositional quota with the fleet-capacity quota. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This quota is applied to all timeframes but the allocation differs based on historic fleet landings.

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|----------------------------------|------------|------------|------------|------------|------------|
| Large Capacity Bait Quota | 76,673,772 | 83,801,240 | 43,145,092 | 19,896,982 | 42,307,281 |
| Medium Capacity Quota | 16,283,469 | 24,502,849 | 16,017,066 | 16,403,544 | 19,203,896 |
| Small Capacity Quota | 402,555 | 1,147,245 | 556,308 | 389,987 | 655,102 |

| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
|----------------------------------|-------------|-------------|------------|------------|------------|
| Large Capacity Bait Quota | 108,635,669 | 101,277,948 | 95,567,069 | 71,732,990 | 90,021,397 |
| Medium Capacity Quota | 23,071,326 | 29,612,906 | 35,478,058 | 59,138,380 | 40,862,034 |
| Small Capacity Quota | 570,363 | 1,386,503 | 1,232,231 | 1,405,987 | 1,393,926 |

7a. Allocations with a 0.5% fixed minimum quota. This table includes all historic reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|-------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------|
| ME | 2,280,187 | 3,101,682 | 5,805,521 | 9,827,301 | 7,397,142 |
| NH | 2,204,745 | 2,204,696 | 2,216,101 | 2,230,300 | 2,221,049 |
| MA | 5,624,327 | 4,601,512 | 4,443,588 | 4,714,945 | 4,673,958 |
| RI | 2,282,693 | 2,811,135 | 4,628,390 | 7,442,268 | 5,768,907 |
| CT | 2,274,217 | 2,254,735 | 2,319,162 | 2,290,733 | 2,277,726 |
| NY | 2,495,413 | 3,222,741 | 2,666,344 | 2,608,646 | 2,830,536 |
| NJ | 48,002,477 | 53,391,517 | 23,742,752 | 10,743,199 | 26,153,259 |
| PA | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 |
| DE | 2,260,146 | 2,333,117 | 2,276,606 | 2,273,973 | 2,295,344 |
| MD | 8,333,763 | 10,267,735 | 6,244,195 | 4,487,352 | 6,575,970 |
| PRFC | 4,736,226 | 5,666,175 | 6,311,300 | 7,207,563 | 6,650,615 |
| VA | 347,313,601 | 339,176,026 | 337,867,507 | 334,101,324 | 335,934,960 |
| NC | 4,218,335 | 2,834,714 | 32,760,463 | 42,513,841 | 28,176,634 |
| SC | 2,204,623 | 2,204,678 | 2,205,165 | 2,205,817 | 2,205,405 |
| GA | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 |
| FL | 2,284,526 | 2,444,817 | 3,028,185 | 3,868,018 | 3,353,775 |

7b. Allocations with a 0.5% fixed minimum quota. This table includes only VA reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|-------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------|
| ME | 2,280,187 | 3,101,682 | 2,467,680 | 2,296,478 | 2,610,393 |
| NH | 2,204,745 | 2,204,696 | 2,217,101 | 2,233,623 | 2,222,345 |
| MA | 5,624,327 | 4,601,512 | 4,638,738 | 5,039,797 | 4,868,928 |
| RI | 2,282,693 | 2,811,135 | 4,839,648 | 8,120,054 | 6,050,330 |
| CT | 2,274,217 | 2,254,735 | 2,329,146 | 2,301,876 | 2,283,498 |
| NY | 2,495,413 | 3,222,741 | 2,706,588 | 2,660,930 | 2,879,956 |
| NJ | 48,002,477 | 53,391,517 | 25,620,041 | 11,848,148 | 28,044,158 |
| PA | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 |
| DE | 2,260,146 | 2,333,117 | 2,282,880 | 2,282,948 | 2,302,507 |
| MD | 8,333,763 | 10,267,735 | 6,596,289 | 4,782,752 | 6,921,116 |
| PRFC | 4,736,226 | 5,666,175 | 6,669,243 | 7,854,977 | 7,001,655 |
| VA | 347,313,601 | 339,176,026 | 367,124,285 | 377,050,981 | 362,285,130 |
| NC | 4,218,335 | 2,834,714 | 4,096,833 | 4,635,993 | 3,933,750 |
| SC | 2,204,623 | 2,204,678 | 2,205,212 | 2,205,972 | 2,205,467 |
| GA | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 | 2,204,623 |
| FL | 2,284,526 | 2,444,817 | 2,721,594 | 3,200,753 | 2,906,045 |

7c. Bait landings divided by jurisdiction with a 0.5% fixed minimum quota. These landings represent a combination of the dispositional quota with 0.5% fixed minimum quota. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This quota is applied to all timeframes but the allocation differs based on historic state bait landings.

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 542,363 | 1,444,316 | 535,295 | 260,904 | 675,253 |
| NH | 466,921 | 547,330 | 309,821 | 207,905 | 326,748 |
| MA | 3,886,504 | 2,944,146 | 2,488,847 | 2,574,057 | 2,703,637 |
| RI | 544,869 | 1,153,769 | 2,669,629 | 5,171,314 | 3,764,650 |
| CT | 536,393 | 597,369 | 410,640 | 265,456 | 381,669 |
| NY | 757,589 | 1,565,375 | 750,269 | 568,208 | 917,346 |
| NJ | 46,264,653 | 51,734,150 | 21,368,146 | 8,314,824 | 23,517,245 |
| PA | 466,799 | 547,257 | 298,592 | 183,453 | 310,831 |
| DE | 522,322 | 675,751 | 369,010 | 249,496 | 398,741 |
| MD | 6,595,939 | 8,610,369 | 4,250,281 | 2,357,318 | 4,546,701 |
| PRFC | 2,998,402 | 4,008,809 | 4,315,927 | 4,947,803 | 4,619,033 |
| VA | 25,816,228 | 32,563,326 | 18,589,292 | 7,964,775 | 16,577,473 |
| NC | 2,480,511 | 1,177,348 | 2,001,232 | 2,233,572 | 1,863,756 |
| SC | 466,799 | 547,312 | 299,123 | 184,590 | 311,590 |
| GA | 466,799 | 547,257 | 298,592 | 183,453 | 310,831 |
| FL | 546,703 | 787,451 | 763,771 | 1,023,384 | 940,777 |

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 768,451 | 1,745,528 | 1,185,687 | 940,617 | 1,436,802 |
| NH | 661,560 | 661,476 | 686,258 | 749,544 | 695,255 |
| MA | 5,506,615 | 3,558,146 | 5,512,836 | 9,280,042 | 5,752,796 |
| RI | 772,001 | 1,394,387 | 5,913,271 | 18,643,724 | 8,010,419 |
| CT | 759,992 | 721,950 | 909,575 | 957,027 | 812,114 |
| NY | 1,073,395 | 1,891,833 | 1,661,857 | 2,048,516 | 1,951,929 |
| NJ | 65,550,336 | 62,523,283 | 47,330,784 | 29,976,767 | 50,039,974 |
| PA | 661,387 | 661,387 | 661,387 | 661,387 | 661,387 |
| DE | 740,055 | 816,678 | 817,362 | 899,488 | 848,440 |
| MD | 9,345,493 | 10,406,057 | 9,414,441 | 8,498,650 | 9,674,466 |
| PRFC | 4,248,303 | 4,844,845 | 9,559,846 | 17,837,915 | 9,828,374 |
| VA | 36,577,869 | 39,354,392 | 41,175,579 | 28,714,763 | 35,273,532 |
| NC | 3,514,527 | 1,422,883 | 4,432,761 | 8,052,517 | 3,965,698 |
| SC | 661,387 | 661,454 | 662,561 | 665,487 | 663,001 |
| GA | 661,387 | 661,387 | 661,387 | 661,387 | 661,387 |
| FL | 774,599 | 951,673 | 1,691,766 | 3,689,525 | 2,001,784 |

8a. Allocations with a 1% fixed minimum quota. This table includes all historic reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|-------------|
| ME | 4,478,239 | 5,228,300 | 7,697,022 | 11,369,082 | 9,150,242 |
| NH | 4,409,357 | 4,409,313 | 4,419,725 | 4,432,690 | 4,424,243 |
| MA | 7,531,584 | 6,597,710 | 6,453,518 | 6,701,278 | 6,663,856 |
| RI | 4,480,527 | 4,963,017 | 6,622,250 | 9,191,443 | 7,663,591 |
| CT | 4,472,788 | 4,455,000 | 4,513,825 | 4,487,867 | 4,475,991 |
| NY | 4,674,750 | 5,338,831 | 4,830,817 | 4,778,136 | 4,980,732 |
| NJ | 46,224,677 | 51,145,105 | 24,074,494 | 12,205,336 | 26,275,391 |
| PA | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 |
| DE | 4,459,940 | 4,526,566 | 4,474,969 | 4,472,565 | 4,492,077 |
| MD | 10,005,416 | 11,771,217 | 8,097,550 | 6,493,476 | 8,400,475 |
| PRFC | 6,720,709 | 7,569,793 | 8,158,821 | 8,977,147 | 8,468,630 |
| VA | 319,508,747 | 312,078,788 | 310,884,053 | 307,445,364 | 309,119,553 |
| NC | 6,247,852 | 4,984,546 | 32,308,056 | 41,213,314 | 28,122,821 |
| SC | 4,409,245 | 4,409,296 | 4,409,740 | 4,410,336 | 4,409,960 |
| GA | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 |
| FL | 4,482,201 | 4,628,553 | 5,161,193 | 5,927,998 | 5,458,471 |

8b. Allocations with a 1% fixed minimum quota. This table includes only VA reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|-------------|
| ME | 4,478,239 | 5,228,300 | 4,649,428 | 4,493,113 | 4,779,731 |
| NH | 4,409,357 | 4,409,313 | 4,420,639 | 4,435,723 | 4,425,427 |
| MA | 7,531,584 | 6,597,710 | 6,631,699 | 6,997,883 | 6,841,872 |
| RI | 4,480,527 | 4,963,017 | 6,815,138 | 9,810,291 | 7,920,543 |
| CT | 4,472,788 | 4,455,000 | 4,522,940 | 4,498,042 | 4,481,261 |
| NY | 4,674,750 | 5,338,831 | 4,867,561 | 4,825,873 | 5,025,854 |
| NJ | 46,224,677 | 51,145,105 | 25,788,540 | 13,214,203 | 28,001,865 |
| PA | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 |
| DE | 4,459,940 | 4,526,566 | 4,480,698 | 4,480,760 | 4,498,617 |
| MD | 10,005,416 | 11,771,217 | 8,419,027 | 6,763,189 | 8,715,609 |
| PRFC | 6,720,709 | 7,569,793 | 8,485,638 | 9,568,264 | 8,789,145 |
| VA | 319,508,747 | 312,078,788 | 337,596,763 | 346,660,268 | 333,178,404 |
| NC | 6,247,852 | 4,984,546 | 6,136,915 | 6,629,192 | 5,988,014 |
| SC | 4,409,245 | 4,409,296 | 4,409,783 | 4,410,477 | 4,410,016 |
| GA | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 | 4,409,245 |
| FL | 4,482,201 | 4,628,553 | 4,881,263 | 5,318,755 | 5,049,674 |

8c. Bait landings divided by jurisdiction with a 1% fixed minimum quota. These landings represent a combination of the dispositional quota with 1% fixed minimum quota. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This quota is applied to all timeframes but the allocation differs based on historic state bait landings.

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 1,002,592 | 1,913,568 | 813,304 | 437,622 | 954,395 |
| NH | 933,710 | 1,094,581 | 607,437 | 389,231 | 636,196 |
| MA | 4,055,937 | 3,282,978 | 2,596,982 | 2,549,631 | 2,806,398 |
| RI | 1,004,880 | 1,648,285 | 2,762,044 | 4,921,040 | 3,775,149 |
| CT | 997,140 | 1,140,268 | 699,489 | 441,778 | 686,340 |
| NY | 1,199,102 | 2,024,099 | 1,009,585 | 718,204 | 1,175,437 |
| NJ | 42,749,030 | 47,830,373 | 19,834,603 | 7,791,201 | 21,810,128 |
| PA | 933,598 | 1,094,513 | 597,185 | 366,905 | 621,663 |
| DE | 984,293 | 1,211,834 | 661,479 | 427,206 | 701,928 |
| MD | 6,529,769 | 8,456,485 | 4,205,248 | 2,351,739 | 4,489,195 |
| PRFC | 3,245,062 | 4,255,061 | 4,265,185 | 4,716,964 | 4,555,238 |
| VA | 24,078,729 | 30,326,576 | 17,297,389 | 7,471,591 | 15,473,813 |
| NC | 2,772,205 | 1,669,814 | 2,151,769 | 2,238,753 | 2,039,550 |
| SC | 933,598 | 1,094,564 | 597,669 | 367,944 | 622,355 |
| GA | 933,598 | 1,094,513 | 597,185 | 366,905 | 621,663 |
| FL | 1,006,554 | 1,313,821 | 1,021,913 | 1,133,799 | 1,196,830 |

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 1,420,528 | 2,312,641 | 1,801,482 | 1,577,723 | 2,030,761 |
| NH | 1,322,932 | 1,322,855 | 1,345,482 | 1,403,265 | 1,353,696 |
| MA | 5,746,677 | 3,967,641 | 5,752,358 | 9,191,981 | 5,971,451 |
| RI | 1,423,770 | 1,992,034 | 6,117,972 | 17,741,430 | 8,032,760 |
| CT | 1,412,804 | 1,378,071 | 1,549,380 | 1,592,706 | 1,460,394 |
| NY | 1,698,955 | 2,446,224 | 2,236,246 | 2,589,283 | 2,501,095 |
| NJ | 60,569,206 | 57,805,374 | 43,933,963 | 28,088,991 | 46,407,571 |
| PA | 1,322,774 | 1,322,774 | 1,322,774 | 1,322,774 | 1,322,774 |
| DE | 1,394,601 | 1,464,561 | 1,465,186 | 1,540,170 | 1,493,561 |
| MD | 9,251,740 | 10,220,081 | 9,314,692 | 8,478,536 | 9,552,106 |
| PRFC | 4,597,784 | 5,142,452 | 9,447,454 | 17,005,691 | 9,692,631 |
| VA | 34,116,084 | 36,651,169 | 38,313,993 | 26,936,726 | 32,925,167 |
| NC | 3,927,814 | 2,018,053 | 4,766,202 | 8,071,197 | 4,339,753 |
| SC | 1,322,774 | 1,322,835 | 1,323,846 | 1,326,518 | 1,324,247 |
| GA | 1,322,774 | 1,322,774 | 1,322,774 | 1,322,774 | 1,322,774 |
| FL | 1,426,141 | 1,587,818 | 2,263,554 | 4,087,596 | 2,546,615 |

9a. Allocations with a 2% fixed minimum quota. This table includes all historic reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|-------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------|
| ME | 8,874,342 | 9,481,535 | 11,480,024 | 14,452,644 | 12,656,440 |
| NH | 8,818,581 | 8,818,545 | 8,826,974 | 8,837,469 | 8,830,631 |
| MA | 11,346,098 | 10,590,104 | 10,473,378 | 10,673,946 | 10,643,652 |
| RI | 8,876,195 | 9,266,782 | 10,609,971 | 12,689,793 | 11,452,961 |
| CT | 8,869,930 | 8,855,530 | 8,903,150 | 8,882,137 | 8,872,523 |
| NY | 9,033,423 | 9,571,013 | 9,159,763 | 9,117,117 | 9,281,122 |
| NJ | 42,669,078 | 46,652,282 | 24,737,977 | 15,129,612 | 26,519,656 |
| PA | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 |
| DE | 8,859,529 | 8,913,464 | 8,871,696 | 8,869,750 | 8,885,545 |
| MD | 13,348,724 | 14,778,182 | 11,804,261 | 10,505,725 | 12,049,486 |
| PRFC | 10,689,676 | 11,377,029 | 11,853,861 | 12,516,316 | 12,104,659 |
| VA | 263,899,040 | 257,884,310 | 256,917,144 | 254,133,444 | 255,488,740 |
| NC | 10,306,887 | 9,284,210 | 31,403,242 | 38,612,260 | 28,015,195 |
| SC | 8,818,490 | 8,818,531 | 8,818,891 | 8,819,373 | 8,819,069 |
| GA | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 |
| FL | 8,877,550 | 8,996,025 | 9,427,210 | 10,047,957 | 9,667,864 |

9b. Allocations with a 2% fixed minimum quota. This table includes only VA reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|-------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------|
| ME | 8,874,342 | 9,481,535 | 9,012,924 | 8,886,383 | 9,118,408 |
| NH | 8,818,581 | 8,818,545 | 8,827,714 | 8,839,925 | 8,831,590 |
| MA | 11,346,098 | 10,590,104 | 10,617,620 | 10,914,054 | 10,787,760 |
| RI | 8,876,195 | 9,266,782 | 10,766,118 | 13,190,766 | 11,660,970 |
| CT | 8,869,930 | 8,855,530 | 8,910,529 | 8,890,373 | 8,876,789 |
| NY | 9,033,423 | 9,571,013 | 9,189,508 | 9,155,761 | 9,317,650 |
| NJ | 42,669,078 | 46,652,282 | 26,125,539 | 15,946,313 | 27,917,278 |
| PA | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 |
| DE | 8,859,529 | 8,913,464 | 8,876,333 | 8,876,383 | 8,890,839 |
| MD | 13,348,724 | 14,778,182 | 12,064,505 | 10,724,064 | 12,304,594 |
| PRFC | 10,689,676 | 11,377,029 | 12,118,427 | 12,994,839 | 12,364,123 |
| VA | 263,899,040 | 257,884,311 | 278,541,719 | 285,878,842 | 274,964,953 |
| NC | 10,306,887 | 9,284,210 | 10,217,080 | 10,615,590 | 10,096,541 |
| SC | 8,818,490 | 8,818,531 | 8,818,926 | 8,819,488 | 8,819,115 |
| GA | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 | 8,818,490 |
| FL | 8,877,550 | 8,996,025 | 9,200,600 | 9,554,760 | 9,336,933 |

9c. Bait landings divided by jurisdiction with a 2% fixed minimum quota. These landings represent a combination of the dispositional quota with 2% fixed minimum quota. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This quota is applied to all timeframes but the allocation differs based on historic state bait landings.

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 1,923,048 | 2,852,071 | 1,369,323 | 791,057 | 1,512,680 |
| NH | 1,867,286 | 2,189,081 | 1,202,669 | 751,884 | 1,255,090 |
| MA | 4,394,804 | 3,960,641 | 2,813,253 | 2,500,779 | 3,011,921 |
| RI | 1,924,900 | 2,637,318 | 2,946,875 | 4,420,491 | 3,796,148 |
| CT | 1,918,635 | 2,226,066 | 1,277,187 | 794,421 | 1,295,684 |
| NY | 2,082,128 | 2,941,549 | 1,528,217 | 1,018,195 | 1,691,619 |
| NJ | 35,717,784 | 40,022,818 | 16,767,517 | 6,743,955 | 18,395,892 |
| PA | 1,867,196 | 2,189,027 | 1,194,369 | 733,810 | 1,243,326 |
| DE | 1,908,235 | 2,284,001 | 1,246,417 | 782,625 | 1,308,302 |
| MD | 6,397,430 | 8,148,718 | 4,115,183 | 2,340,581 | 4,374,185 |
| PRFC | 3,738,381 | 4,747,566 | 4,163,703 | 4,255,286 | 4,427,648 |
| VA | 20,603,731 | 25,853,078 | 14,713,582 | 6,485,222 | 13,266,495 |
| NC | 3,355,592 | 2,654,746 | 2,452,842 | 2,249,116 | 2,391,139 |
| SC | 1,867,196 | 2,189,068 | 1,194,761 | 734,651 | 1,243,886 |
| GA | 1,867,196 | 2,189,027 | 1,194,369 | 733,810 | 1,243,326 |
| FL | 1,926,255 | 2,366,562 | 1,538,197 | 1,354,629 | 1,708,937 |

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 2,724,681 | 3,446,869 | 3,033,073 | 2,851,934 | 3,218,680 |
| NH | 2,645,675 | 2,645,613 | 2,663,930 | 2,710,707 | 2,670,580 |
| MA | 6,226,803 | 4,786,630 | 6,231,401 | 9,015,858 | 6,408,763 |
| RI | 2,727,306 | 3,187,330 | 6,527,375 | 15,936,840 | 8,077,441 |
| CT | 2,718,429 | 2,690,311 | 2,828,990 | 2,864,064 | 2,756,955 |
| NY | 2,950,075 | 3,555,007 | 3,385,025 | 3,670,816 | 3,599,426 |
| NJ | 50,606,945 | 48,369,557 | 37,140,319 | 24,313,437 | 39,142,764 |
| PA | 2,645,547 | 2,645,547 | 2,645,547 | 2,645,547 | 2,645,547 |
| DE | 2,703,693 | 2,760,328 | 2,760,833 | 2,821,535 | 2,783,804 |
| MD | 9,064,235 | 9,848,129 | 9,115,196 | 8,438,307 | 9,307,388 |
| PRFC | 5,296,746 | 5,737,668 | 9,222,669 | 15,341,242 | 9,421,146 |
| VA | 29,192,513 | 31,244,725 | 32,590,820 | 23,380,651 | 28,228,437 |
| NC | 4,754,390 | 3,208,392 | 5,433,084 | 8,108,557 | 5,087,864 |
| SC | 2,645,547 | 2,645,596 | 2,646,415 | 2,648,578 | 2,646,740 |
| GA | 2,645,547 | 2,645,547 | 2,645,547 | 2,645,547 | 2,645,547 |
| FL | 2,729,226 | 2,860,107 | 3,407,131 | 4,883,736 | 3,636,276 |

10a. Jurisdictional allocation. This table includes all historic reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|-------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------|
| ME | 82,135 | 975,065 | 3,914,020 | 8,285,520 | 5,644,043 |
| NH | 133 | 80 | 12,476 | 27,910 | 17,854 |
| MA | 3,717,070 | 2,605,315 | 2,433,658 | 2,728,611 | 2,684,060 |
| RI | 84,859 | 659,252 | 2,634,530 | 5,693,092 | 3,874,222 |
| CT | 75,646 | 54,470 | 124,500 | 93,598 | 79,460 |
| NY | 316,077 | 1,106,650 | 501,871 | 439,156 | 680,341 |
| NJ | 49,780,276 | 55,637,928 | 23,411,010 | 9,281,061 | 26,031,126 |
| PA | - | - | - | - | - |
| DE | 60,351 | 139,667 | 78,243 | 75,381 | 98,610 |
| MD | 6,662,109 | 8,764,252 | 4,390,839 | 2,481,227 | 4,751,464 |
| PRFC | 2,751,743 | 3,762,557 | 4,463,780 | 5,437,978 | 4,832,601 |
| VA | 375,118,455 | 366,273,265 | 364,850,961 | 360,757,284 | 362,750,366 |
| NC | 2,188,818 | 684,881 | 33,212,870 | 43,814,367 | 28,230,448 |
| SC | - | 60 | 589 | 1,298 | 851 |
| GA | - | - | - | - | - |
| FL | 86,852 | 261,081 | 895,176 | 1,808,039 | 1,249,079 |

10b. Jurisdictional allocation. This table only includes VA reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|-------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------|
| ME | 82,135 | 975,065 | 285,931 | 99,842 | 441,055 |
| NH | 133 | 80 | 13,564 | 31,522 | 19,264 |
| MA | 3,717,070 | 2,605,315 | 2,645,778 | 3,081,711 | 2,895,984 |
| RI | 84,859 | 659,252 | 2,864,158 | 6,429,817 | 4,180,117 |
| CT | 75,646 | 54,470 | 135,351 | 105,710 | 85,734 |
| NY | 316,077 | 1,106,650 | 545,615 | 495,986 | 734,058 |
| NJ | 49,780,276 | 55,637,928 | 25,451,542 | 10,482,092 | 28,086,452 |
| PA | - | - | - | - | - |
| DE | 60,351 | 139,667 | 85,062 | 85,136 | 106,396 |
| MD | 6,662,109 | 8,764,252 | 4,773,550 | 2,802,315 | 5,126,623 |
| PRFC | 2,751,743 | 3,762,557 | 4,852,849 | 6,141,689 | 5,214,166 |
| VA | 375,118,455 | 366,273,265 | 396,651,807 | 407,441,694 | 391,391,856 |
| NC | 2,188,818 | 684,881 | 2,056,750 | 2,642,794 | 1,879,486 |
| SC | - | 60 | 641 | 1,466 | 918 |
| GA | - | - | - | - | - |
| FL | 86,852 | 261,081 | 561,926 | 1,082,750 | 762,416 |

10c. Bait landings divided by jurisdiction. These landings represent a combination of the dispositional and jurisdictional allocation methods. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This quota is applied to all timeframes but the allocation differs based on historic state bait landings.

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 82,135 | 975,065 | 257,285 | 84,186 | 396,110 |
| NH | 133 | 80 | 12,205 | 26,579 | 17,301 |
| MA | 3,717,070 | 2,605,315 | 2,380,712 | 2,598,484 | 2,600,875 |
| RI | 84,859 | 659,252 | 2,577,214 | 5,421,589 | 3,754,151 |
| CT | 75,646 | 54,470 | 121,791 | 89,134 | 76,997 |
| NY | 316,077 | 1,106,650 | 490,952 | 418,213 | 659,256 |
| NJ | 49,780,277 | 55,637,928 | 22,901,688 | 8,838,447 | 25,224,363 |
| PA | - | - | - | - | - |
| DE | 60,351 | 139,667 | 76,541 | 71,786 | 95,554 |
| MD | 6,662,109 | 8,764,252 | 4,295,314 | 2,362,897 | 4,604,206 |
| PRFC | 2,751,743 | 3,762,557 | 4,366,668 | 5,178,641 | 4,682,828 |
| VA | 27,553,728 | 34,800,075 | 19,881,195 | 8,457,959 | 17,681,132 |
| NC | 2,188,818 | 684,881 | 1,850,695 | 2,228,391 | 1,687,961 |
| SC | - | 60 | 576 | 1,236 | 824 |
| GA | - | - | - | - | - |
| FL | 86,852 | 261,081 | 505,629 | 912,969 | 684,723 |

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------|--------------------|--------------------|--------------------|--------------------|------------|
| ME | 116,374 | 1,178,414 | 569,891 | 303,511 | 842,842 |
| NH | 188 | 97 | 27,034 | 95,823 | 36,813 |
| MA | 5,266,552 | 3,148,652 | 5,273,314 | 9,368,104 | 5,534,140 |
| RI | 120,233 | 796,739 | 5,708,570 | 19,546,019 | 7,988,079 |
| CT | 107,179 | 65,830 | 269,770 | 321,348 | 163,834 |
| NY | 447,835 | 1,337,441 | 1,087,467 | 1,507,749 | 1,402,763 |
| NJ | 70,531,467 | 67,241,191 | 50,727,606 | 31,864,544 | 53,672,377 |
| PA | - | - | - | - | - |
| DE | 85,509 | 168,795 | 169,538 | 258,805 | 203,319 |
| MD | 9,439,246 | 10,592,033 | 9,514,189 | 8,518,764 | 9,796,825 |
| PRFC | 3,898,822 | 4,547,237 | 9,672,239 | 18,670,140 | 9,964,116 |
| VA | 39,039,655 | 42,057,614 | 44,037,166 | 30,492,800 | 37,621,897 |
| NC | 3,101,239 | 827,713 | 4,099,319 | 8,033,838 | 3,591,643 |
| SC | - | 73 | 1,277 | 4,457 | 1,754 |
| GA | - | - | - | - | - |
| FL | 123,057 | 315,529 | 1,119,977 | 3,291,455 | 1,456,954 |

11a. Three region allocations, including all historical reduction landings

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| ME, NH, MA, RI, CT | 3,959,844 | 4,294,182 | 9,119,183 | 16,828,731 | 12,299,639 |
| NY, NJ, PA, DE | 50,156,704 | 56,884,246 | 23,991,124 | 9,795,598 | 26,810,077 |
| MD, PRFC, VA, NC, SC, GA, FL | 386,807,976 | 379,746,097 | 407,814,217 | 414,300,194 | 401,814,808 |

11b. Three region allocations, only include VA reduction landings

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| ME, NH, MA, RI, CT | 3,959,844 | 4,294,182 | 5,944,783 | 9,748,602 | 7,622,153 |
| NY, NJ, PA, DE | 50,156,704 | 56,884,246 | 26,082,219 | 11,063,214 | 28,926,906 |
| MD, PRFC, VA, NC, SC, GA, FL | 386,807,976 | 379,746,097 | 408,897,522 | 420,112,708 | 404,375,465 |

11c. Bait landings divided by three regions. These landings represent a combination of the dispositional and regional allocation methods. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This quota is applied to all timeframes but the allocation differs based on historic regional bait landings.

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------------------------------|--------------------|--------------------|--------------------|--------------------|------------|
| ME, NH, MA, RI, CT | 3,959,844 | 4,294,182 | 5,349,207 | 8,219,972 | 6,845,434 |
| NY, NJ, PA, DE | 50,156,705 | 56,884,245 | 23,469,181 | 9,328,447 | 25,979,172 |
| MD, PRFC, VA, NC, SC, GA, FL | 39,243,249 | 48,272,907 | 30,900,078 | 19,142,094 | 29,341,674 |

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|------------------------------|--------------------|--------------------|--------------------|--------------------|------------|
| ME, NH, MA, RI, CT | 5,610,527 | 5,189,731 | 11,848,579 | 29,634,805 | 14,565,709 |
| NY, NJ, PA, DE | 71,064,811 | 68,747,428 | 51,984,612 | 33,631,098 | 55,278,460 |
| MD, PRFC, VA, NC, SC, GA, FL | 55,602,019 | 58,340,198 | 68,444,166 | 69,011,454 | 62,433,189 |

11d. Fleet landings divided by three regions. These landings represent a combination of the fleet capacity and regional allocation methods. Percentages presented in the top table are based off of a fleet capacity quotas outlined in Tables 5a, 5b, 6a, and 6b. For example, the large fleet-all reduction landings quota for the 1985-2016 timeframe is 423,479,810 pounds.

| Large Fleet - All Historic Reduction Landings (2 or 3 Fleet Options) | | | | | |
|----------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|------------|
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | | | 8,806,111 | | |
| NY, NJ, PA, DE | | | 22,257,209 | | |
| MD, PRFC, VA, NC, SC, GA, FL | | | 392,970,506 | | |
| Large Fleet - VA Only Reduction Landings (2 or 3 Fleet Options) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | | | 5,406,035 | | |
| NY, NJ, PA, DE | | | 24,208,201 | | |
| MD, PRFC, VA, NC, SC, GA, FL | | | 392,939,007 | | |
| Small Fleet (2 Fleet Option-All Red) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 226,368 | 365,299 | 313,072 | 371,775 | 369,435 |
| NY, NJ, PA, DE | 898,229 | 5,042,066 | 1,733,917 | 1,435,836 | 2,738,874 |
| MD, PRFC, VA, NC, SC, GA, FL | 15,561,428 | 20,242,737 | 14,843,709 | 15,637,102 | 17,301,247 |
| Small Fleet (2 Fleet Option-VA Red) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 226,368 | 365,299 | 340,515 | 420,332 | 398,863 |
| NY, NJ, PA, DE | 898,229 | 5,042,066 | 1,885,906 | 1,623,368 | 2,957,043 |
| MD, PRFC, VA, NC, SC, GA, FL | 15,561,428 | 20,242,737 | 16,144,859 | 17,679,432 | 18,679,401 |
| Medium Fleet (3 Fleet Option-All Red) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 140,513 | 322,132 | 215,214 | 292,334 | 303,101 |
| NY, NJ, PA, DE | 825,359 | 4,349,992 | 1,555,415 | 1,345,864 | 2,431,344 |
| MD, PRFC, VA, NC, SC, GA, FL | 15,317,598 | 19,830,732 | 14,553,110 | 15,401,408 | 17,001,847 |
| Medium Fleet (3 Fleet Option-VA Red) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 140,513 | 322,132 | 234,079 | 330,515 | 327,245 |
| NY, NJ, PA, DE | 825,359 | 4,349,992 | 1,691,757 | 1,521,644 | 2,625,016 |
| MD, PRFC, VA, NC, SC, GA, FL | 15,317,598 | 19,830,732 | 15,828,787 | 17,412,953 | 18,356,152 |
| Small Fleet (3 Fleet Option-All Red) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 85,855 | 43,167 | 97,858 | 79,440 | 66,334 |
| NY, NJ, PA, DE | 72,869 | 692,074 | 178,502 | 89,972 | 307,529 |
| MD, PRFC, VA, NC, SC, GA, FL | 243,830 | 412,004 | 290,599 | 235,696 | 299,401 |
| Small Fleet (3 Fleet Option-VARed) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 85,855 | 43,167 | 106,436 | 89,816 | 71,618 |
| NY, NJ, PA, DE | 72,869 | 692,074 | 194,148 | 101,723 | 332,026 |
| MD, PRFC, VA, NC, SC, GA, FL | 243,830 | 412,004 | 316,072 | 266,480 | 323,250 |

11e. Bait landings by fleet and three regions. These landings represent a combination of the dispositional, fleet capacity, and regional allocation methods. Percentages in the top table are based off of the bait by fleet quotas in the upper Tables of 5c and 6c. For example, the large fleet bait quota in 1985-2016 is 43,145,127. The bottom table is based off of the bait by fleet quotas in the bottom Tables of 5c and 6c, where there is a 30/70 split between the bait and reduction fisheries. Here the large fleet bait quota in 1985-2016 is 95,567,145.

| Large Fleet Bait (2 or 3 Fleet Options) | | | | | |
|-----------------------------------------|--------------------|--------------------|--------------------|--------------------|------------|
| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
| ME, NH, MA, RI, CT | | | 4,876,973 | | |
| NY, NJ, PA, DE | | | 21,839,065 | | |
| MD, PRFC, VA, NC, SC, GA, FL | | | 16,429,054 | | |
| Small Fleet Bait (2 Fleet Option) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 226,368 | 365,299 | 307,191 | 357,897 | 359,469 |
| NY, NJ, PA, DE | 898,229 | 5,042,064 | 1,701,342 | 1,382,239 | 2,664,992 |
| MD, PRFC, VA, NC, SC, GA, FL | 15,561,428 | 20,242,731 | 14,564,842 | 15,053,395 | 16,834,538 |
| Medium Fleet Bait (3 Fleet Option) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 140,513 | 322,132 | 211,171 | 281,422 | 294,925 |
| NY, NJ, PA, DE | 825,359 | 4,349,991 | 1,526,193 | 1,295,625 | 2,365,758 |
| MD, PRFC, VA, NC, SC, GA, FL | 15,317,598 | 19,830,726 | 14,279,702 | 14,826,497 | 16,543,214 |
| Small Fleet Bait (3 Fleet Option) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 85,855 | 43,167 | 96,020 | 76,475 | 64,545 |
| NY, NJ, PA, DE | 72,869 | 692,074 | 175,148 | 86,614 | 299,233 |
| MD, PRFC, VA, NC, SC, GA, FL | 243,830 | 412,004 | 285,140 | 226,898 | 291,325 |

| Large Fleet Bait (2 or 3 Fleet Options, 30/70 Split Between Bait and Reduction) | | | | | |
|---------------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|------------|
| | 2009-2011 | 2012-2016 | 1985-2016 | 1985-1995 | Weighted |
| ME, NH, MA, RI, CT | | | 10,802,574 | | |
| NY, NJ, PA, DE | | | 48,373,878 | | |
| MD, PRFC, VA, NC, SC, GA, FL | | | 36,390,617 | | |
| Small Fleet Bait (2 Fleet Option, 30/70 Split Between Bait and Reduction) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 320,731 | 441,482 | 680,432 | 1,290,299 | 764,878 |
| NY, NJ, PA, DE | 1,272,660 | 6,093,584 | 3,768,499 | 4,983,275 | 5,670,567 |
| MD, PRFC, VA, NC, SC, GA, FL | 22,048,297 | 24,464,342 | 32,261,356 | 54,270,793 | 35,820,515 |
| Medium Fleet Bait (3 Fleet Option, 30/70 Split Between Bait and Reduction) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 199,086 | 389,312 | 467,746 | 1,014,588 | 627,540 |
| NY, NJ, PA, DE | 1,169,415 | 5,257,179 | 3,380,543 | 4,671,012 | 5,033,857 |
| MD, PRFC, VA, NC, SC, GA, FL | 21,702,825 | 23,966,415 | 31,629,768 | 53,452,780 | 35,200,637 |
| Small Fleet Bait (3 Fleet Option, 30/70 Split Between Bait and Reduction) | | | | | |
| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
| ME, NH, MA, RI, CT | 121,645 | 52,170 | 212,685 | 275,709 | 137,338 |
| NY, NJ, PA, DE | 103,245 | 836,405 | 387,956 | 312,262 | 636,708 |
| MD, PRFC, VA, NC, SC, GA, FL | 345,472 | 497,928 | 631,590 | 818,016 | 619,880 |

12a. Four region allocations. This table includes all historical reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|--------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| ME, NH, MA, RI, CT | 3,959,844 | 4,294,182 | 9,119,183 | 16,828,731 | 12,299,639 |
| NY, NJ, PA, DE | 50,156,704 | 56,884,246 | 23,991,124 | 9,795,598 | 26,810,077 |
| MD, PRFC, VA | 384,532,306 | 378,800,074 | 373,705,581 | 368,676,490 | 372,334,431 |
| NC, SC, GA, FL | 2,275,670 | 946,022 | 34,108,636 | 45,623,704 | 29,480,377 |

12b. Four region allocations. This table only includes VA reduction landings.

| | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|--------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| ME, NH, MA, RI, CT | 3,959,844 | 4,294,182 | 5,944,783 | 9,748,602 | 7,622,153 |
| NY, NJ, PA, DE | 50,156,704 | 56,884,246 | 26,082,219 | 11,063,214 | 28,926,906 |
| MD, PRFC, VA | 384,532,306 | 378,800,074 | 406,278,206 | 416,385,698 | 401,732,645 |
| NC, SC, GA, FL | 2,275,670 | 946,022 | 2,619,316 | 3,727,010 | 2,642,820 |

12c. Bait landings divided by four regions. These landings represent a combination of the dispositional and regional allocation methods. Percentages presented in the top table are based off of a bait quota allocated to the timeframe in Table 2a. For example, the 2009-2011 bait quota is 93,359,797 while the 2012-2016 bait quota is 109,451,334. The bottom table is based off a bait quota of 132,277,357 pounds, which results from the 30/70 split between the bait and reduction fisheries. This quota is applied to all timeframes but the allocation differs based on historic regional bait landings.

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|--------------------|--------------------|--------------------|--------------------|--------------------|------------|
| ME, NH, MA, RI, CT | 3,959,844 | 4,294,182 | 5,349,207 | 8,219,972 | 6,845,434 |
| NY, NJ, PA, DE | 50,156,705 | 56,884,245 | 23,469,181 | 9,328,447 | 25,979,172 |
| MD, PRFC, VA | 36,967,579 | 47,326,884 | 28,543,177 | 15,999,498 | 26,968,165 |
| NC, SC, GA, FL | 2,275,670 | 946,022 | 2,356,901 | 3,142,596 | 2,373,509 |

| BAIT | 2009-2011 TAC % | 2012-2016 TAC % | 1985-2016 TAC % | 1985-1995 TAC % | Weighted |
|--------------------|--------------------|--------------------|--------------------|--------------------|------------|
| ME, NH, MA, RI, CT | 5,610,527 | 5,189,731 | 11,848,579 | 29,634,805 | 14,565,709 |
| NY, NJ, PA, DE | 71,064,811 | 68,747,428 | 51,984,612 | 33,631,098 | 55,278,460 |
| MD, PRFC, VA | 52,377,724 | 57,196,884 | 63,223,593 | 57,681,704 | 57,382,838 |
| NC, SC, GA, FL | 3,224,296 | 1,143,315 | 5,220,573 | 11,329,750 | 5,050,351 |



Image courtesy of Brian Gratwicke

Introduction

This document presents a summary of the 2017 Stock Assessment Update for Atlantic menhaden. The assessment is an update to the 2015 Benchmark Stock Assessment that was peer-reviewed by an independent panel of scientific experts through the 40th SouthEast, Data, Assessment, and Review (SEDAR) workshop. This assessment is the latest and best information available on the status of the coast-wide Atlantic menhaden stock for use in fisheries management.

Management Overview

The Atlantic menhaden stock is currently managed under Amendment 2 (2012) to the Fishery Management Plan. Amendment 2 instituted a 170,800 metric ton (mt) total allowable catch (TAC) beginning in 2013 and established state-by-state allocations based on landings history from 2009-2011. States are required to close their fisheries when their portion of the TAC has been reached and any overages must be paid back the following year. Under Amendment 2, the Atlantic Menhaden Management Board (Board) also sets aside 1% of the overall TAC for episodic events and allows a 6,000 pound bycatch limit per trip for non-directed fisheries that operate after a jurisdiction's quota has been landed.

In 2015, the Board established an 187,880 mt TAC for the 2015 and 2016 fishing years. This represented a 10% increase from the 2013 and 2014 TAC. In October 2016, the Board approved a TAC of 200,000 mt for the 2017 fishing year, representing a 6.45% increase from the 2015 and 2016 fishing years. Both increases stemmed from results of the 2015 Stock Assessment as well as projection analysis.

Amendment 3 to the Atlantic Menhaden FMP was initiated in 2015 to consider the development of ecological reference points (ERPs) and revisit allocation methods. Given the role of menhaden as forage fish, ERPs are intended to account for changes in the abundance of prey and predator species when setting overfished/overfishing thresholds and targets for menhaden. The Board is also investigating various allocation scenarios given concern that the current method does not provide equitable access to all gear types, jurisdictions, and regions. Draft Amendment 3 is slated for public hearings this fall, and the Board is scheduled to take final action on the Amendment in November 2017. In addition, the Board will be selecting a TAC for 2018.

What Data Were Used?

The Atlantic menhaden assessment used both fishery-dependent and -independent data as well as information about Atlantic menhaden biology and life history. Fishery-dependent data come from the commercial reduction and bait fisheries, while fishery-independent data are collected through scientific research and surveys.

Life History

Atlantic menhaden undergo extensive north-south migratory movements and are believed to consist of a single population. Adults move inshore and northward in the spring, grouping by age and size along the Atlantic coast. During the summer, older and larger menhaden are

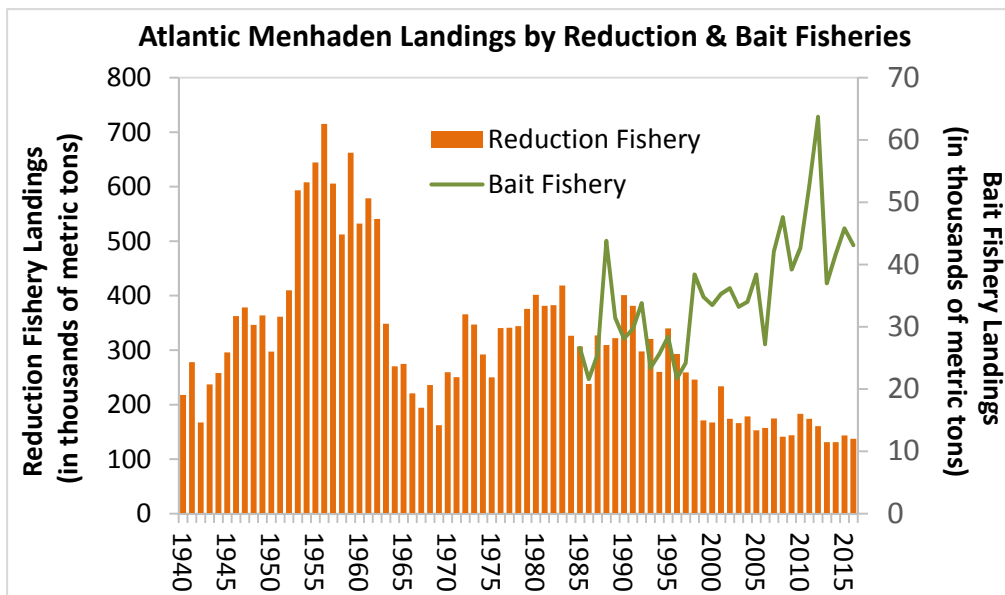
typically found in northerly habitats whereas immature menhaden are typically found in estuarine and inshore areas from the Chesapeake Bay southward. The population extends as far north as the Gulf of Maine though menhaden abundance in the northern extent of its range can significantly fluctuate from year to year. Spawning occurs along the continental shelf as well as in sounds and bays. Eggs hatch at sea and larvae are carried by inshore currents to estuaries where they grow to the juvenile stage. Adults typically overwinter off the coast of North Carolina. Menhaden start reaching sexual maturity at age-1 and can live up to 10 years; however, fish older than age-6 have been uncommon in the fishery-dependent data since the mid-1960s. Natural mortality is modeled as age-varying with the highest mortality on the youngest fish.

Commercial Data

The Reduction Fishery

Atlantic menhaden are harvested primarily for reduction to fish meal, oil, and solubles. The reduction fishery grew with the advent of purse seine gear in the mid-1800s. Purse seine landings peaked in 1956 at 712,500 mt. At the time, over 20 menhaden reduction factories were in operation from southern Maine to northern Florida. In the 1960s, the Atlantic menhaden stock contracted geographically, and many of the fish factories north of the Chesapeake Bay closed because of a scarcity of fish. Reduction landings dropped to a low of 162,300 mt in 1969.

In the 1970s and 1980s, the menhaden population began to expand (primarily because of a series of large year classes entering the fishery), and reduction landings rose to around 300,000-400,000 mt. Adult menhaden were again abundant in the northern half of their range and as a result reduction factories in New England and Canada began processing menhaden again. However, by 1989 all shore-side reduction plants in New England had closed, mainly because of odor abatement regulations.



During the 1990s, the Atlantic menhaden stock contracted again, mostly due to a series of poor year classes. Over the next decade, several reduction plants consolidated or closed, resulting in a significant decrease in fleet size and fishing capacity. Since 2005, there has been one operational reduction factory processing Atlantic menhaden on the Atlantic coast. From 2010-2012, landings averaged 172,600 mt. Following the implementation of the

coastwide TAC, landings in 2013 were 131,000 mt. In 2016, reduction landings were 137,400 mt and accounted for approximately 76% of coastwide landings. Numerous portside samples are taken to obtain information about the weight, length, and age distribution of the fished population.

The Bait Fishery

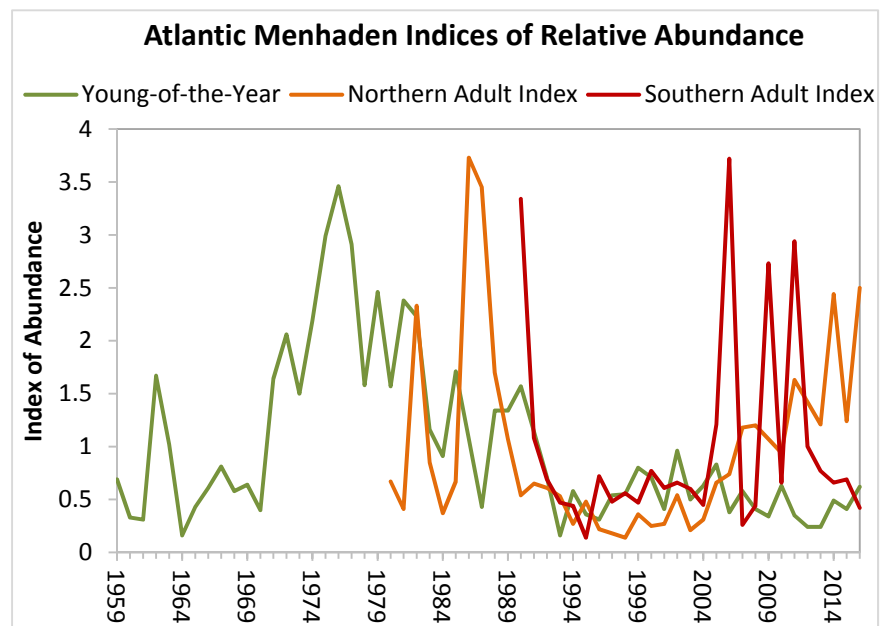
While reduction landings have declined since the mid-2000s, menhaden landings for bait have become increasingly important to the total coastwide landings of menhaden. Commercial bait landings occur in almost every Atlantic coast state. A majority of the menhaden-for-bait landings are used commercially in crab, lobster, and hook-and-line fisheries. Recreational fishermen also catch Atlantic menhaden as bait for various game fish.

Total landings of menhaden for bait along the Atlantic Coast averaged 53,000 mt annually in 2010-2012. Following the implementation of the coastwide TAC, landings in 2013 were 37,000 mt. In 2016, bait landings were 43,100 mtons and comprised 24% of coastwide landings. Since the mid-1980s, portside samples have been taken to obtain information about the weight, length, and age distribution of the fished population.

Fishery-Independent Surveys

Data collected from several different surveys were used in the 2015 stock assessment and 2017 update. These data were used to inform both juvenile and adult abundance within the model. Data used to develop an index of relative abundance for juvenile menhaden (young-of-the-year) were collected from seine surveys conducted in Connecticut, New York, New Jersey, Virginia, and Maryland; from trawl surveys in Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, and Georgia; and from an electrofishing survey in South Carolina. Data from these 16 surveys were statistically combined into one coastwide index. The index increased from historic lows in the 1960s to highs in the 1970s and 1980s, with a decline through the mid-1990s. Young-of-year abundance has since been lower with notable year classes in 2005, 2010, and 2016.

Two adult abundance indices were developed using state survey data. The first was the southern adult index (SAD), which included trawl survey data from Georgia and the Southeast Area Monitoring and Assessment Program. The second was the northern adult index (NAD), which included trawl survey data from Connecticut, New Jersey, Delaware, Virginia, Chesapeake Bay Multispecies Monitoring and Assessment Program, and Chesapeake Bay Fishery-independent Multispecies Survey. Data from each of the surveys were statistically combined into the two coastwide indices of adult abundance.



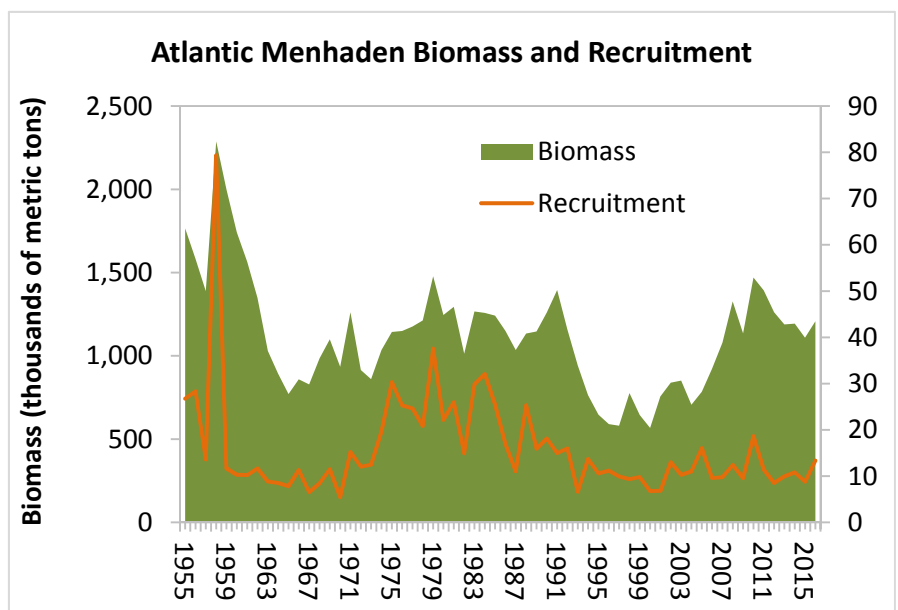
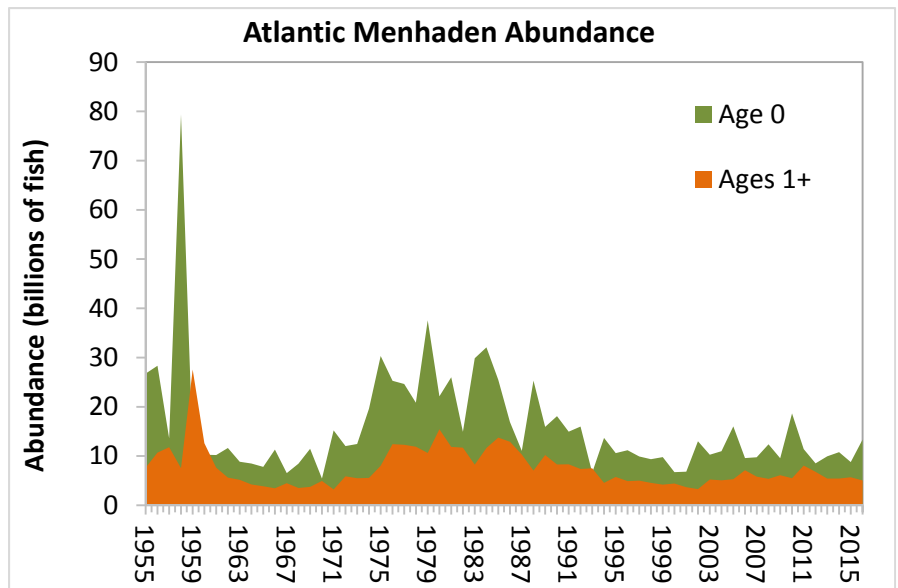
The SAD index was low through the 1990s and early 2000s. Throughout the mid-2000s and early-2010s it was highly variable and has been on a decline since 2012. The NAD index was high during the 1980s, declined to a low around 2000, and has been increasing since then. 2014 and 2016 represented two of the largest values in the NAD index, second only to 1987 and 1988. In the most recent years, the NAD index indicated an increase in abundance for ages-2+, while the SAD index indicated a slightly decreasing abundance for age-1.

What Models Were Used?

The Beaufort Assessment Model (BAM), which was used for providing management advice during the 2015 benchmark stock assessment. Using the same model, additional years of data (2013-2016) were incorporated into the 2017 update. BAM is a statistical catch-at-age model that estimates population size-at-age and recruitment, using 1955 as the based year, and then projects the population forward in time. The model estimates trends in the population, including abundance-at-age, recruitment, spawning stock biomass, egg production, and fishing mortality rates. BAM was configured to be a fleets-as-areas model with each of the fleets broken into areas to reflect differences along the coast. This means that both reduction and bait fleets were split into north and south regions because the fisheries operated differently along the coast and through time.

Model results indicate the population has undergone several periods of both high and low abundance. Following a peak in the late 1950s, abundance was high in the 1970s and 1980s, with a decline in the 1990s and a subsequent increase in the 2000s. Juvenile abundance follows a similar pattern with highs in the 1970s and 1980s, a decline in the 1990s, and a slight increase during the 2000s. Population fecundity (measured as number of maturing ova, or eggs) is variable in the beginning of the time series, with many highs and lows. After a period of low fecundity in the 1990s, fecundity has been increasing since the mid-2000s.

Fishing mortality rates were highly variable throughout the entire time series, with a decline in fishing mortality from the 1950s to the 1960s. Since the early 2000s, fishing mortality rates have declined to some of the lowest values in the entire time series. The model suggests a high degree of variability, but in general the reduction fishery has experienced declining fishing mortality rates since the 1950s in the north and since 2000 in the south. The bait fishery has expanded since the 1980s causing some increase in fishing mortality in the north and south.



What is the Status of the Stock?

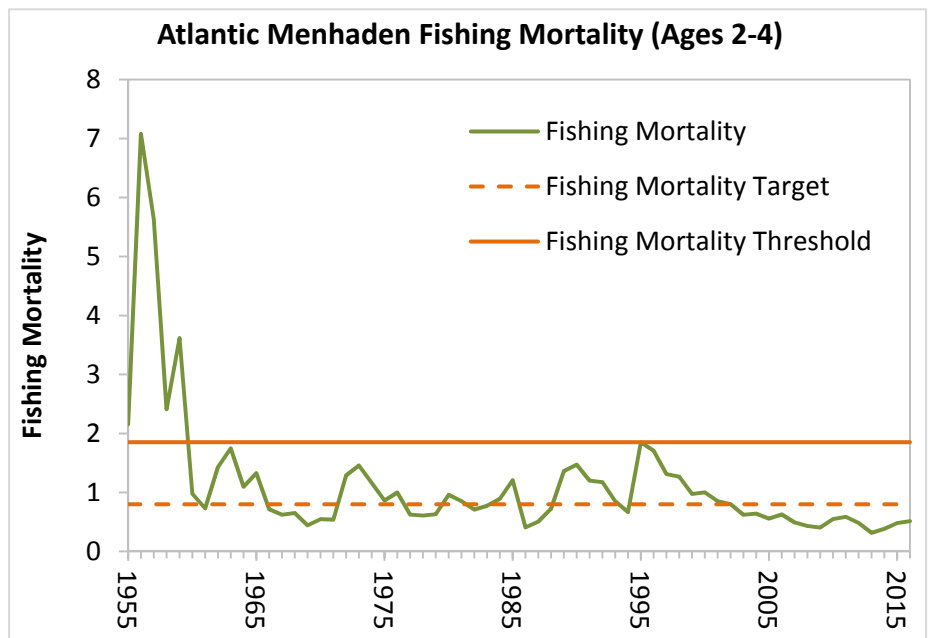
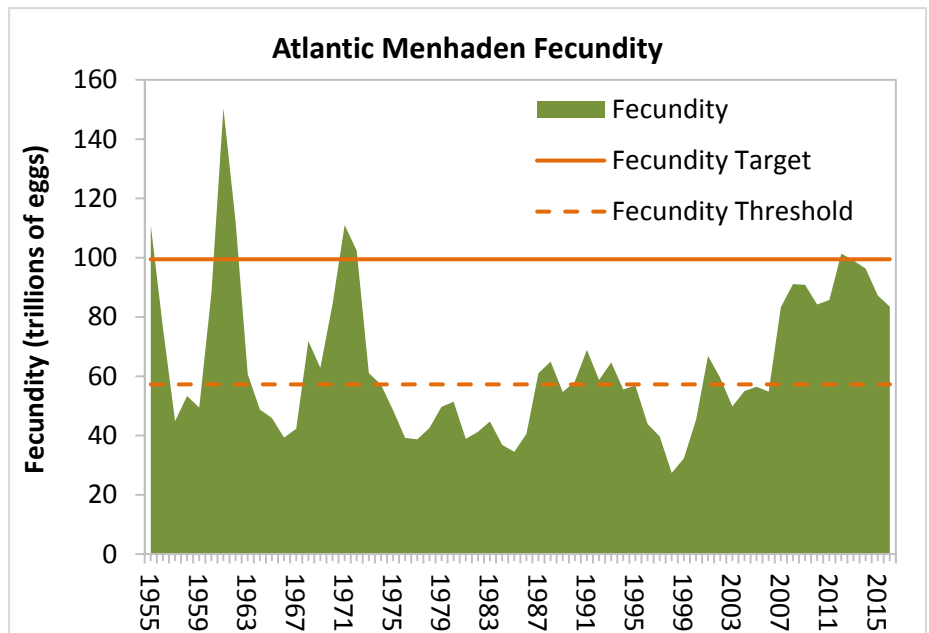
Based on the assessment update, Atlantic menhaden are neither overfished nor experiencing overfishing. Stock status was evaluated against the assessment's reference points, which used historical performance of the population during the 1960-2012 time frame, a period during which the Technical Committee considers the population to have been sustainably fished. Fishing mortality rates have remained below the overfishing threshold (1.85) since the 1960s, and hovered around the overfishing target (0.8) through the 1990s. In 2003, fishing mortality dropped below the target and was estimated to be 0.51 in 2016 (the latest year in the assessment update). Generally, fishing mortality has been decreasing throughout the history of the fishery, has been below the threshold since the early 1960s, and has been below the target since the early 2000s.

The biological reference point used to determine the fecundity target is defined as the mature egg production one would expect when the population is being fished at the threshold fishing mortality rate.

Population fecundity, a measure of reproductive capacity, has been well above the threshold (57,295 billion eggs) and at or near the target (99,467 billion eggs) in recent years. In 2016, fecundity is estimated to be 83,486 billion eggs, still well above the threshold but below the target.

Why are the Reference Points for the Update Different from the 2015 Benchmark Assessment?

The stock status stemming from the 2017 update assessment is assessed in the same way as the status from the 2015 benchmark assessment, although the reference point values have changed. The threshold and target are calculated as the maximum and median geometric mean fishing mortality rate for ages-2 to -4 during 1960-2012 using the same methods as the benchmark assessment. Adding the additional years (2013-2016) of data results in generally higher fishing mortality values throughout the time series. This is primarily an effect of the NAD which shows significant increases in menhaden abundance in the Mid-Atlantic and New England states, thus affecting the scaling of the reference points. This trend supports the higher landings values reported by the northern states in recent years. Since the estimated maximum and median fishing mortality



values associated with the update are higher than the 2015 benchmark, the resulting reference points are $F_{36\%MSP}$, $F_{21\%MSP}$, $FEC_{36\%MSP}$, and $FEC_{21\%MSP}$ which differ from the 2015 reference points of $F_{57\%MSP}$, $F_{38\%MSP}$, $FEC_{57\%MSP}$, and $FEC_{38\%MSP}$.

| <i>Reference Points</i> | <i>Update Values</i> |
|-----------------------------------------------------------|--------------------------------------------|
| $F_{21\%MSP} (THRESHOLD) = 1.85$ | $F_{48\%MSP} (F \text{ in } 2016) = 0.51$ |
| $F_{36\%MSP} (TARGET) = 0.80$ | |
| $FEC_{21\%MSP} (THRESHOLD) = 57,295 \text{ billion eggs}$ | $FEC_{2016} = 83,486 \text{ billion eggs}$ |
| $FEC_{36\%MSP} (TARGET) = 99,467 \text{ billion eggs}$ | |

While the scale is different and the trend differs in some years, the stock status for both fishing mortality rate (F) and fecundity (FEC) has been similar over the past decade. For reference, MSP is the estimated egg production from the female reproductive population that would occur if there was no fishing. %MSP can be used to measure the health of a stock, with a higher %MSP indicating that egg production is closer to that of an unfished stock. The use of MSP was adopted in 2012 under Amendment 2 as an interim reference point with the goal of increasing abundance, spawning stock biomass, and menhaden availability as a forage species while the Commission’s develops ecological-based reference points for the resource.

Research Needs & Next Steps

Both the 2015 benchmark assessment and the 2017 update identified a number of data and research needs for future Atlantic menhaden stock assessments. In particular, the Atlantic menhaden stock assessment would be substantially improved by the development of a coastwide fishery-independent survey to replace or supplement the existing indices. Also, development of a spatially-explicit (e.g., regional) stock assessment model would be beneficial once sufficient age-specific data on movement rates of menhaden are available.

Currently, the Biological Ecological Reference Point Workgroup is developing menhaden-specific ERPs based on multi-species models. The purpose of this analysis is to consider the ecological role of menhaden as prey when determining an overfished and overfishing status. This work was noted as a high priority by the 2015 Peer Review Panel and is expected to be complete in 2019 in conjunction with the 2019 benchmark stock assessment.

Glossary

Age class – All of the individuals in a stock that were spawned or hatched in the same year. This is also known as the year class or cohort.

Biological reference point (BRP) – A particular value of stock size, catch, fishing effort, or fishing mortality that may be used as a measure of stock status or management plan effectiveness. BRPs can be categorized as limits, targets, or thresholds depending on their intended use.

Fecundity (FEC) – The number of eggs produced per female per unit time (e.g., per spawning season).

Fishing mortality (F) – The instantaneous (not annual) rate at which fish are killed by fishing

Maximum spawning potential (MSP) – The estimated egg production from female spawning stock biomass that would occur in the absence of fishing. A percentage of this value (%MSP) can be used as a measure of the health of a fish stock.

Recruitment – A measure of the weight or number of fish that enter a defined portion of the stock, such as the spawning stock or fishable stock.

Overfishing – A condition in which the rate of removal of fish by the fishery exceeds to the ability of the stock to replenish itself.

Overfished – A condition in which there is insufficient mature female biomass or egg production to replenish the stock.

Statistical catch-at-age (SCAA) model – An age-structured stock assessment model that works forward in time to estimate population size and fishing mortality in each year. It assumes some the catch-at-age data have a known level of error.

Young-of-the-year (YOY) – An individual fish in its first year of life; for most species, YOY are juveniles.

References

ASMFC. 2017. Atlantic Menhaden Stock Assessment Update. ASMFC, Arlington, VA. XXX pp. Insert weblink

SEDAR. 2015. [SEDAR 40 – Atlantic Menhaden Stock Assessment Report](#). SEDAR, North Charleston SC. 643 pp.

http://www.asmfc.org/uploads/file/55089931S40_AtMenhadenSAR_CombinedFINAL_1.15.2015-reduced.pdf

Subject: Update on ecosystem modeling to support Atlantic menhaden fisheries management

To: Biological Ecological Reference Points (BERP) Committee

From: Andre Buchheister (Humboldt State University), Thomas J. Miller (Chesapeake Biological Lab), and Edward D. Houde (Chesapeake Biological Lab)

CC: Robert E. Beal (ASMFC Executive Director), Patrick A. Campfield (ASMFC Fisheries Science Program Director), Toni Kearns (ASMFC Interstate Fisheries Management Program Director)

Date: 7/24/17

Here, we provide an update on the status of our ecosystem modeling research in support of ecological reference point (ERP) development and evaluation. As you know, we developed an Ecopath with Ecosim (EwE) model of the Northwest Atlantic Continental Shelf (NWACS) region to support ecosystem approaches to Atlantic menhaden management. Our research manuscript on this issue was recently accepted for publication in the journal *Marine and Coastal Fisheries*. We will be providing the paper to the BERP and are arranging to present the results in the September 2017 BERP meeting. Below, we provide a synopsis of the major benefits and findings of the research, we briefly address some methodological concerns raised by Dr. Ray Hilborn, and we provide some thoughts on how the model could be integrated into addressing the BERP's charge.

Our NWACS model is currently the only tool now available to explore consequences and tradeoffs of alternative reference points and other menhaden harvest policy choices for Atlantic menhaden within a broad ecosystem context. We offer to communicate or collaborate in any way that may be helpful to the BERP's important work to develop reference points in an ecosystem approach to managing Atlantic menhaden fisheries.

Major benefits of the NWACS model:

- The model is comprehensive and was developed based on long time series of fisheries and ecosystem data, extending from 1982 to 2013.
- It was developed specifically for Atlantic menhaden and accounts for diverse menhaden predators such as fishes, birds, and marine mammals.
- It represents menhaden and its important fish predators as age-structured populations rather than as unstructured populations.
- It incorporates predator-prey feedbacks (e.g., the effects of menhaden on predators and vice versa), which most modeling methods being considered by the BERP do not address.
- It allows for the quantification and evaluation of potential ecosystem tradeoffs associated with different management decisions in a common currency – that is, we can simulate proposed management approaches within the same management tool to enable comparisons of the performance of different options.
- Its particular strength lies in its ability to provide strategic, long-term management advice, but it does not provide short-term, tactical advice (e.g., annual catch limits).

- It can be a modeling foundation for adding complexity, addressing other research questions, or comparing with other models.

Major findings

- Simulations of the ecosystem under different menhaden fishing mortality rates resulted in a range of responses by the 61 trophic groups modeled within the system.
- Striped bass was among the most sensitive species that was negatively-affected by menhaden fishing, along with other higher trophic-level groups (birds, highly migratory species, sharks, and marine mammals).
- Bluefish and weakfish had modest to negligible responses at the highest menhaden F rates.
- We quantified tradeoffs associated with a range of alternative ecosystem-based reference points, including F for maximum sustainable yield (F_{MSY}), $0.5F_{MSY}$, proxies for current single-species F reference points, 75% unfished B (B_0), and $40\%B_0$.
- The alternative reference points considered resulted in 1) variable menhaden biomasses (40-75% of B_0) and yields (54-100% MSY), 2) up to a 60% decline in striped bass biomass and yield, 3) negative impacts on the biomass of 13% of modeled groups, and 4) positive impacts on the biomass of 6% of groups.
- There were some discrepancies between the NWACS model and the 2015 stock assessment model results related to scale of biomass, catch, and the level of menhaden depletion, and there were challenges in translating existing single species reference points into the EwE framework. These differences between the modeling frameworks should be investigated in future research.

Brief response to Hilborn et al. comments

Our research addresses several limitations noted by Dr. Ray Hilborn at the June 30 2017 BERP meeting and in his recent paper (Hilborn et al. 2017). For example, our model is case-specific, developed specifically for Atlantic menhaden. Also, our model accounts for size-selectivity in predator-prey relationships that are important for menhaden. Our model can be used as a platform or foundation to evaluate additional questions related to effects of environmental regime shifts on biological productivity, prey spatial distributions, and predator production.

Next steps

- When our paper is published, we will make the model and its documentation available to the BERP and other interested parties. We stand ready to facilitate technical reviews or additional evaluation of the model.
- We would welcome an opportunity to collaborate with ASMFC and the BERP to apply, update, or modify the model to address specific management questions or perceived weaknesses to better meet the needs of managers.

References

Hilborn, R., R. O. Amoroso, E. Bogazzi, O. P. Jensen, A. M. Parma, C. Szuwalski, and C. J. Walters. 2017. When does fishing forage species affect their predators? Fisheries Research (2017).

<http://dx.doi.org/10.1016/j.fishres.2017.01.008>.

The Honorable Ryan Zinke
Secretary
Department of the Interior
1849 C Street, N.W.
Washington, DC 20240

Dear Secretary Zinke:

Thank you for the opportunity to provide comments from the Atlantic States Marine Fisheries Commission (Commission) relative to the new five-year National Offshore Oil and Gas Leasing Program on the Outer Continental Shelf (OCS) for 2019 – 2024. These comments are of a general nature for Atlantic waters, and we request that they be considered applicable to future leasing programs as well.

For over 75 years, the Commission has been responsible for coordinating the conservation and management of nearshore fish species, with membership from all the states of the US Atlantic coast from Maine to Florida. Fisheries resources are profoundly important to the social and economic well-being of US Atlantic coastal communities, and provide numerous benefits to the nation. In 2015, recreational and commercial fishing supported over 450,000 jobs and added over \$24 billion to the economy on the Atlantic coast alone¹. The Commission's efforts to manage fishery resources are best served in the context of a healthy and resilient ecosystem.

As noted in our previous letter sent on July 26, 2017, the ocean is an acoustic environment and the Commission is concerned the propagation of sound from seismic surveys and other sound producing G&G activities may have significant impacts on fish populations, our coastal ecosystem, and the commercial and recreational fisheries on which they rely. Fish and other living marine resources depend on sound for their most vital life functions such as foraging, avoiding predators, navigating, communicating and finding mates, and the water column in which they live is a vital habitat supporting their life functions. At present, there is insufficient information about how seismic surveys and other G&G activities may affect fish, marine mammals and sea turtles, benthic communities, and ecosystem structure and function, but new studies continue to be released demonstrating potential negative impacts on the marine environment^{2,3}. We recommend the areas listed in appendix 1 be off limits for OCS leasing in the Atlantic, acknowledging that many of these sites fall under more than one category.

The Commission asks that you consider the areas identified above and thanks you for the opportunity to provide comments to the Department of Interior on this important issue. We look forward to working with you in the future to ensure responsible development of domestic

¹ National Marine Fisheries Service. 2017. Fisheries Economics of the United States, 2015. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-170, 247p.

² Paxton, A.B. et al. 2017. Seismic survey noise disrupted fish use of a temperate reef. *Marine Policy* 78: 68-73.

³ McCauley, R.D. et al. 2017. Widely used marine seismic survey air gun operations negatively impact zooplankton. *Nature Ecology & Evolution* 1. Doi: 10.1038/s41559-017-0195.

energy resources in the Atlantic. Please contact Lisa Havel, lhavel@asmfc.org, if you have any questions.

Sincerely,

DRAFT

Appendix 1

Areas Recommend to be off limits for OCS leasing in the Atlantic, acknowledging that many of these sites fall under more than one category:

Current and Proposed Habitat Areas of Particular Concern

NOAA Fisheries and the eight regional fishery management councils have identified specific habitat types and/or areas as Habitat Areas of Particular Concern (HAPC) (a subset of Essential Fish Habitat) based on their ecological function, sensitivity to human-induced degradation, current or potential stress from development activities, and/or rarity.

In the northeast and mid-Atlantic, current and proposed HAPCs include:

- Atlantic salmon habitat (11 rivers in Maine, including: Machias, East Machias, Pleasant, Narraguagus, Ducktrap, Sheepscot, Kennebec, Penobscot, St. Croix, Tunk Stream)
- Atlantic cod habitat
 - Inshore juvenile cod habitat (inshore areas of the Gulf of Maine and Southern New England, 0 – 20 m)
 - Northern Edge
 - Great South Channel
- Cashes Ledge
- Jeffreys Ledge & Stellwagen Bank
- Bear & Retriever Seamounts
- Canyons
 - Heezen Canyon
 - Lydonia, Gilbert, & Oceanographer Canyons
 - Hydrographer Canyon
 - Veatch Canyon
 - Alvin & Atlantis Canyons
 - Hudson Canyon and the shelf breaks
 - Toms, Middle Toms, & Hendrickson Canyons
 - Wilmington Canyon
 - Baltimore Canyon
 - Washington Canyon
 - Norfolk Canyon
- Deep sea coral habitat
- Golden tilefish habitat
- Summer flounder habitat

South Atlantic HAPCs include:

- Coastal migratory pelagic habitat
 - Sandy shoals of Cape Lookout, Cape Fear, and Cape Hatteras from shore to the ends of the respective shoals, but shoreward of the Gulf Stream
 - The Point
 - Ten-Fathom Ledge
 - Big Rock

- Charleston Bump
- Hurl Rocks
- The Point off Jupiter Inlet
- *Phragmatopoma* (worm reefs) off the central east coast of Florida
- Nearshore hard bottom south of Cape Canaveral
- The Hump off Islamorada, Florida
- The “Wall” off of the Florida Keys
- Pelagic *Sargassum*
- Atlantic coast estuaries with high numbers of Spanish mackerel and cobia based on abundance data from the ELMR program including Bogue Sound, New River, and Broad River
- Spiny lobster habitat
 - Florida Bay
 - Biscayne Bay
 - Card Sound
 - Coral/Hardbottom Habitat from Jupiter Inlet, Florida through the Dry Tortugas, Florida
- Snapper grouper habitat
 - Medium to high profile offshore hard bottoms where spawning normally occurs
 - Localities of known or likely periodic spawning aggregations
 - Nearshore hardbottom areas
 - The Point
 - Ten Fathom Ledge
 - Big Rock
 - Charleston Bump
 - Mangrove habitat
 - Seagrass habitat
 - Oyster/shell habitat
 - All coastal inlets
 - All state-designated nursery habitats of particular importance to snapper-grouper
 - Pelagic and benthic *Sargassum*
 - Hoyt Hills for wreckfish
 - The *Oculina* Bank Habitat Area of Particular Concern
 - All hermatypic coral habitats and reefs
 - Manganese outcroppings on the Blake Plateau
 - SAFMC designated Artificial Reef Special Management Zones
- Golden and blueline tilefish habitat
 - Irregular bottom comprised of troughs and terraces intermingled with sand, mud, or shell hash bottom
 - Mud-clay bottoms in depths of 150 – 300 m
 - Irregular bottom habitats along the shelf edge in 45 – 65 m depth, shelf break
 - Upper slope along the 100 fm contour (150 – 225 m)

- Hardbottom habitats characterized as rock overhangs, rock outcrops, manganese phosphorite rock slab formations, or rocky reefs in the South Atlantic Bight; and the Georgetown Hole (Charleston Lumps) off Georgetown, South Carolina
- Dolphin-Wahoo habitat
 - The Point
 - Ten Fathom Ledge
 - Big Rock
 - Charleston Bump
 - Georgetown Hole
 - The Point off Jupiter Inlet
 - The Hump off Islamorada, Florida
 - The Marathon Hump off Marathon, Florida
 - The “Wall” off of the Florida Keys
 - Pelagic *Sargassum*
- Penaeid shrimp habitat
 - All coastal inlets
 - All state-designated nursery habitats of particular importance to shrimp
 - State-identified overwintering areas
- Coral, coral reef, and live bottom habitat
 - Ten Fathom Ledge
 - Big Rock
 - The Point
 - Hurl Rocks
 - Charleston Bump
 - Gray’s Reef National Marine Sanctuary
 - *Phragmatopoma* (worm reef) reefs off the central east coast of Florida
 - *Oculina* Banks off the east coast of Florida from Ft. Pierce to Cape Canaveral
 - Nearshore (0 – 4 m) hard bottom off the east coast of Florida from Cape Canaveral to Broward County
 - Offshore (5 – 30 m) hard bottom off the east coast of Florida from Palm Beach County to Fowey Rocks
 - Biscayne Bay, Florida
 - Biscayne National Park, Florida
 - Florida Keys National Marine Sanctuary
- Deepwater corals
 - Cape Lookout Coral HAPC
 - Cape Fear Coral HAPC
 - Stetson Reefs, Savannah and East Florida Lithoherms, and Miami Terrace Coral HAPC
 - Pourtales Terrace Coral HAPC
 - Blake Ridge Diapir Coral HAPC
- Deepwater Marine Protected Areas (MPAs)
 - Snowy Grouper Wreck MPA
 - Northern South Carolina MPA

- Edisto MPA
- Charleston Deep Artificial Reef MPA
- Georgia MPA
- North Florida MPA
- St. Lucie Hump MPA
- East Hump MPA

National Marine Sanctuaries, Parks, and Monuments

National Marine Sanctuaries, Parks, and Monuments work to preserve the beauty, biodiversity, historical connections, and economic productivity of some of the most special underwater areas in the United States, and are supported by the National Marine Sanctuaries, National Park Service Organic Acts, and Executive Orders. The current and proposed sanctuaries along the Atlantic coast include Stellwagon Bank (Massachusetts), Monitor (North Carolina), Mallows Bay (Maryland), Gray's Reef (Georgia), and the Florida Keys (Florida). National Parks include Biscayne and Dry Tortugas, both in Florida. Most recently, in 2016, the Northeast Canyons and Seamounts Marine National Monument was designated southeast of Georges Bank.

Draft Proceedings of the Business Session May 2017

**DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
BUSINESS SESSION**

The Westin Alexandria
Alexandria, Virginia
May 11, 2017

These minutes are draft and subject to approval by the Business Session
The Board will review the minutes during its next meeting

TABLE OF CONTENTS

Call to Order, Chairman Douglas Grout 1

Approval of Agenda 1

Review Non-compliance Findings 1

Adjournment..... 2

INDEX OF MOTIONS

1. **Approval of Agenda** by consent (Page 1).
2. **On behalf of the ISFMP Policy Board move the full Commission find the state of New Jersey be out of compliance for not fully and effectively implementing and enforcing Addendum XXVIII to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan if the State does not implement the following measures or equivalent measures as approved by the Summer Flounder Board by May 21, 2017:**
 - **Shore mode for Island Beach State Park only: 17-inch minimum size limit; 2-fish possession limit and 128-day open season.**
 - **Delaware Bay only (west of the colregs line): 18-inch minimum size limit; 3-fish possession limit and 128-day open season.**
 - **All other marine waters (east of the colregs line): 19-inch minimum size limit; 3-fish possession limit and 128-day open season**

The implementation of these regulations is necessary to achieve the conservation goals and objectives of the FMP to end overfishing of the summer flounder stock. In order to come back into compliance, the state of New Jersey must implement all of the measures listed above as contained in Addendum XXVIII to the Summer Flounder FMP (Page 1).

Motion made by Mr. Grout on behalf of the ISFMP Policy Board. Motion carries (Roll Call Vote: In Favor – RI, CT, NY, PA, DE, MD, VA, NC, SC, GA, FL; Opposed – NJ; Abstentions – NH) (Page 2).
3. **Move to Adjourn** by consent (Page 2).

ATTENDANCE

Board Members

| | |
|----------------------------------------------------|-----------------------------------------------|
| Dennis Abbott, NH, proxy for Sen. Watters (LA) | Craig Pugh, DE, proxy for Rep. Carson (LA) |
| Doug Grout, NH (AA) | David Blazer, MD (AA) |
| Ritchie White, NH (GA) | Rachel Dean, MD (GA) |
| Raymond Kane, MA (GA) | Ed O'Brien, MD, proxy for Del. Stein (LA) |
| David Pierce, MA (AA) | John Bull, VA (AA) |
| Eric Reid, RI, proxy for Sen. Sosnowski (LA) | Chris Batsavage, NC, proxy for B. Davis (AA) |
| Jason McNamee, RI, proxy for J. Coit (AA) | David Bush, NC, proxy for Rep. Steinburg (LA) |
| David Borden, RI (GA) | Robert Boyles, SC (AA) |
| Mark Alexander, CT (AA) | Malcolm Rhodes, SC (GA) |
| James Gilmore, NY (AA) | Spud Woodward, GA (AA) |
| Emerson Hasbrouck, NY (GA) | Pat Geer, GA, proxy for Rep. Nimmer (LA) |
| Russ Allen, NJ, proxy for L. Herrighty (AA) | Rep. Thad Altman, FL (LA) |
| Tom Fote, NJ (GA) | Jim Estes, FL, proxy for J. McCawley (AA) |
| Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA) | Martin Gary, PRFC |
| Andy Shiels, PA, proxy for J. Arway (AA) | Wilson Laney, proxy for Sherry White, USFWS |
| Roy Miller, DE (GA) | Kelly Denit, NMFS |
| John Clark, DE, proxy for D. Saveikis (AA) | |

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

Ex-Officio Members

Staff

| | |
|------------|-------------|
| Bob Beal | Katie Drew |
| Toni Kerns | Ashton Harp |

Guests

The Business Session of the Atlantic States Marine Fisheries Commission convened in the Edison Ballroom of the Westin Hotel, Alexandria, Virginia, May 11, 2017, and was called to order at 11:28 o'clock a.m. by Chairman Douglas E. Grout.

CALL TO ORDER

CHAIRMAN DOUGLAS E. GROUT: Okay, everybody stand up, take a stretch, and then sit back down immediately and we'll go right into this Business Session so we can give the South Atlantic Board an opportunity to do their work before their flights go out. I'm calling to order the Business Session of the Full Commission.

APPROVAL OF AGENDA

CHAIRMAN GROUT: We have an agenda before us. I'm going to modify it. I'm going to take out the proceedings.

There were no proceedings from January, 2017. Are there any other changes or additions to this agenda? Seeing none; any objections to approving the agenda as modified? Seeing none; the agenda is approved.

Is there any public comment on items not on the agenda?

REVIEW NON-COMPLIANCE FINDINGS

CHAIRMAN GROUT: Seeing none; we'll move on to Item 4; Noncompliance Finding. We have a motion from the Policy Board, which is up on the board. Because it's a Board motion it doesn't need a second. Is there any discussion on this motion? Okay, I'm going to read this into the record; and while I'm reading it into the record, please caucus within your states.

On behalf of the ISFMP Policy Board, move the Full Commission find the state of New Jersey be out of compliance for not fully and effectively implementing and enforcing Addendum XXVIII of the Summer Flounder, Scup and Black Sea Bass Fishery Management

Plan; if the State does not implement the following measures, or equivalent measures as approved by the Summer Flounder Board by May 21, 2017.

Shore mode for Island Beach State Park only: 17-inch minimum size limit, 2-fish possession limit and 128-day open season. Delaware Bay only (west of the colregs line): 18-inch minimum size limit, 3-fish possession limit and 128-day open season. All other marine waters (east of the colregs line): 19-inch minimum size limit, 3-fish possession limit and 128-day open season.

The implantation of these regulations is necessary to the achievement of conservation goals and objectives of the FMP to end overfishing of the summer flounder stock. In order to come back into compliance, the state of New Jersey must implement all of the measures listed above as contained in Addendum XXVIII to the Summer Flounder FMP.

Are you ready to vote? Roll call vote.

MS. TONI KERNS: Maine is absent. New Hampshire.

CHAIRMAN GROUT: As the Chair I am not going to vote.

MS. KERNS: Massachusetts, absent. I didn't realize he left, I'm sorry. Rhode Island.

MR. JASON McNAMEE: Yes.

MS. KERNS: Connecticut.

MR. MARK ALEXANDER: Yes.

MS. KERNS: New York.

MR. STEVE HEINS: Yes.

MS. KERNS: New Jersey.

MR. TOM BAUM: No.

MS. KERNS: Pennsylvania.

MR. ANDY SHIELS: Yes.

MS. KERNS: Delaware.

MR. JOHN CLARK: Yes.

MS. KERNS: Maryland.

MR. DAVID BLAZER: Yes.

MS. KERNS: Virginia.

MR. JOE CIMINO: Yes.

MS. KERNS: North Carolina.

DR. MICHELLE DUVAL: Yes.

MS. KERNS: South Carolina.

DR. MALCOLM RHODES: Yes.

MS. KERNS: Georgia.

MR. PAT GEER: Yes.

MS. KERNS: Florida.

MR. JIM ESTES: Yes.

CHAIRMAN GROUT: The motion carries 11 to 1 to 1; and there were two absences.

ADJOURNMENT

Is there anything else to come before the Business Session? Seeing none; this meeting is adjourned.

(Whereupon the meeting was adjourned at 11:32 o'clock a.m. on May 11, 2017.)



Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfmc.org

MEMORANDUM

July 24, 2017

To: Summer Flounder, Scup, and Black Sea Bass Management Board
From: Kirby Rootes-Murdy, Senior FMP Coordinator
RE: Draft Addendum XXX Management Alternatives

Introduction

The Board initiated a draft addendum at the ASMFC Spring Meeting in May 2017 to address concerns of equitable access to the black sea bass recreational fishery through the following motion:

Move to initiate an addendum for 2018 recreational black sea bass management with options as recommended by the Working Group and Plan Development Team. Options for regional allocations shall include approaches with uniform regulations (e.g., number of days) and other alternatives to the current North/South regional delineation (MA-NJ/DE-NC) such as those applied for summer flounder, i.e., one-state regions.

This memo includes background information on the black sea bass recreational fishery and possible management alternatives for the Board's consideration at the ASMFC Summer Meeting. Initial draft management alternatives were developed by staff based on the motion. The Board's Recreational Black Sea Bass Working Group provided additional information for the Board to consider for further developing the document (see 'proposed management program' section on page 8). The document has been structured to be used in crafting the draft addendum for Board Review.

Overview/Statement of the Problem

The Commission's ISFMP Charter establishes fairness and equity as guiding principles for the conservation and management programs set forth in the Commission's FMPs. In recent years, challenges in the black sea bass recreational fishery have centered on providing equitable access to the resource in the face of uncertain population size, structure, and distribution. In the absence of an accepted peer reviewed stock assessment, biomass estimate, and reference points, the Board and Council had set coastwide catch limits at conservative levels to ensure sustainability of the resource. Coastwide catch limits set from 2010-2016 were largely based on a constant catch approach used to maintain or increase the size of the population based on historical catch data; for 2016, a Management Strategy Evaluation was considered and approved by the Board and Council to increase both the recreational and commercial catch limits. In recent years, fishery independent and dependent information and the 2016 benchmark stock assessment have indicated a much higher abundance of the resource than previously assumed. This presented challenges in both maintaining recreational harvest to the coastwide catch limits as well as crafting recreational measures that ensured equitable access to the resource along the coast.

Starting in 2011, the Board approved addenda that allowed states to craft measures in an aim to reduce harvest to the annual coastwide catch limit while maintaining state flexibility. After a single year of management by state shares, the Board adopted what became officially known as the ad-hoc regional management approach, where the states of Massachusetts through New Jersey would individually craft state measures aimed at reducing harvest by the same percent, while Delaware through North Carolina set their regulations consistent with the federal waters measures. This approach, while allowing the states flexibility in setting their measures, did create discrepancies in conservation measures that were not tied to any original management plan baseline or goal (e.g., state allocations). Inequities resulted in how much of a harvest reduction states were addressing through their measures, with no accountability for the effectiveness of regulations. Most visibly, the ad-hoc approach did not provide uniformity in measures nor in evaluating harvest reductions.

Background

The black sea bass recreational fishery is managed on a “target quota” basis. Fifty-one percent of the total allowable landings are allocated to the recreational sector as the coastwide recreational harvest limit (RHL) and forty-nine percent is allocated to the commercial sector through a coastwide quota with each state allocated a percentage based on historical landings data.

From 1996 to 2010, uniform coastwide size, season, and bag limits had been used by the Commission and Council to constrain the recreational fishery to the annual RHL. Over time, the states grew concerned the coastwide regulations disproportionately impacted states within the management unit; therefore, the Board approved a series of addenda which allowed for state-by-state flexibility, first through state shares in 2011 and then through the ad hoc regional management approach for 2012–2017. The Northern Region states have been subject to harvest reductions in all years except 2012 (liberalization), while the Southern Region states have been largely status quo. Under ad hoc regional management in 2017, the Board initially allowed for status quo measures for all states, but subsequently required the states of Rhode Island through New Jersey to set their possession limit for black sea bass at 5 fish for wave 6 (November 1 through December 31)(Table 1).

Table 1. State by State Black Sea Bass Recreational Measures for 2017.

| State | Minimum Size (inches) | Possession Limit | Open Season |
|--------------------------------------------------------|-----------------------|------------------|------------------------------------------------|
| Maine | 13 | 10 fish | May 19-September 21; October 18-December 31 |
| New Hampshire | 13 | 10 fish | January 1-December 31 |
| Massachusetts | 15 | 5 fish | May 20-August 29 |
| Rhode Island | 15 | 3 fish | May 25- August 31 |
| | | 7 fish | September 1- 21; October 22- 31 |
| | | 5 fish | November 1-December 31 |
| Connecticut (Private & Shore) | 15 | 5 fish | May 1-December 31 |
| CT Authorized Party/Charter Monitoring Program Vessels | | 8 fish | May 1-October 31 |
| | | 5 fish | November 1-December 31 |
| New York | 15 | 3 fish | June 27- August 31 |
| | | 8 fish | September 1-October 31 |
| | | 5 fish | November 1-December 31 |
| New Jersey | 12.5 | 10 fish | May 26-June 18 |
| | | 2 fish | July 1-August 31 |
| | 13* | 15 fish* | October 22-October 31* |
| | * | 5 fish | November 1-December 31 |
| Delaware | 12.5 | 15 fish | May 15-September 21; October 22-December 31 |
| Maryland | 12.5 | 15 fish | May 15-September 21; October 22-December 31 |
| Virginia | 12.5 | 15 fish | May 15-September 21; October 22-December 31 |
| North Carolina, North of Cape Hatteras (N of 35° 15'N) | 12.5 | 15 fish | May 15-September 21; October 22-December 31 |

*NJ DFW indicates fall regulations are TBD

Description of the Fishery

Black sea bass are a popular recreational fishing target in the mid-Atlantic and southern New England regions. Most recreational harvest of black sea bass occurs in the state waters of Massachusetts through New Jersey when the fish migrate inshore during the spring through summer months.

For much of the last decade, coastwide harvest has exceeded the coastwide RHL (Table 2). In 2016, MRIP data indicate that an estimated 5.19 million pounds of black sea bass were harvested recreationally from Maine through Cape Hatteras, North Carolina, exceeding the 2016 RHL by 2.37 million pounds. In 2016, about 65% of black sea bass harvested were caught in state waters and about 35% in federal waters, although state by state percentage caught varies (Table 3). In recent years, the majority of black sea bass were harvest in New Jersey, New York, Connecticut, Rhode Island and Massachusetts. These five states account for 94% of all black sea bass harvest north of Cape Hatteras in 2016 (Table 4; Figure 1). Additionally, MRIP data indicate that 84% of harvest in 2016 came from anglers on private or rental boats, and 16% came from party/charter boats (Figure 2).

Table 2. Black Sea Bass Recreational Harvest relative to coastwide RHL 2007-2016

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-----------------------------|------|------|-------------|-------------|------|-------------|-------------|-------------|-------------|-------------|
| Coastwide Harvest (mil. lb) | 2.18 | 2.03 | 2.56 | 3.19 | 1.17 | 3.19 | 2.46 | 3.6 | 3.79 | 5.19 |
| Coastwide RHL (mil. lb) | 2.47 | 2.11 | 1.14 | 1.83 | 1.78 | 1.32 | 2.26 | 2.26 | 2.33 | 2.82 |
| Percent of RHL harvested | 88% | 96% | 225% | 174% | 66% | 242% | 109% | 159% | 163% | 184% |

Table 3. Percentage of State by state harvest (in pounds) taken from state vs. federal waters in 2016. Please note: North Carolina is omitted due to post-stratification of harvest north of Cape Hatteras

| Year: 2016 | MASSACHUSETTS | RHODE ISLAND | CONNECTICUT | NEW YORK | NEW JERSEY | DELAWARE | MARYLAND | VIRGINIA |
|----------------------------|---------------|--------------|-------------|----------|------------|----------|----------|----------|
| State Waters (<=3 Miles) | 94% | 83% | 95% | 49% | 36% | 8% | 51% | 9% |
| Federal Waters (> 3 Miles) | 6% | 17% | 5% | 51% | 64% | 92% | 49% | 91% |

Table 4. State-by-state recreational harvest of black sea bass (in numbers of fish), Maine through Cape Hatteras, North Carolina, 2007 through 2016.

| Year | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|--------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|
| Maine | | | | | 0 | 0 | | | | |
| New Hampshire | | | | 0 | | 3,195 | 12,283 | 0 | 0 | 0 |
| Massachusetts | 149,434 | 246,136 | 430,748 | 702,138 | 194,752 | 519,910 | 291,678 | 457,099 | 342,554 | 392,239 |
| Rhode Island | 44,024 | 52,303 | 35,972 | 160,427 | 50,203 | 102,548 | 74,727 | 214,463 | 233,631 | 254,704 |
| Connecticut | 23,574 | 59,751 | 465 | 15,682 | 8,378 | 110,858 | 109,807 | 397,033 | 330,628 | 435,624 |
| New York | 409,697 | 259,511 | 566,483 | 543,243 | 274,473 | 321,516 | 353,036 | 469,150 | 876,630 | 1,032,604 |
| New Jersey | 724,591 | 579,617 | 583,373 | 687,451 | 148,487 | 734,928 | 345,337 | 468,402 | 310,298 | 294,312 |
| Delaware | 93,147 | 22,621 | 37,345 | 21,028 | 42,961 | 40,141 | 36,557 | 23,879 | 22,899 | 24,168 |
| Maryland | 38,669 | 26,429 | 33,082 | 36,018 | 47,445 | 33,080 | 29,677 | 68,469 | 57,631 | 79,951 |
| Virginia | 36,152 | 38,045 | 114,805 | 29,718 | 18,964 | 4,076 | 21,295 | 18,802 | 38,763 | 28,913 |
| North Carolina Post-stratified | 8,517 | 9,353 | 3,307 | 10,850 | 30,975 | 3,664 | 8,002 | 696 | 1,920 | 864 |

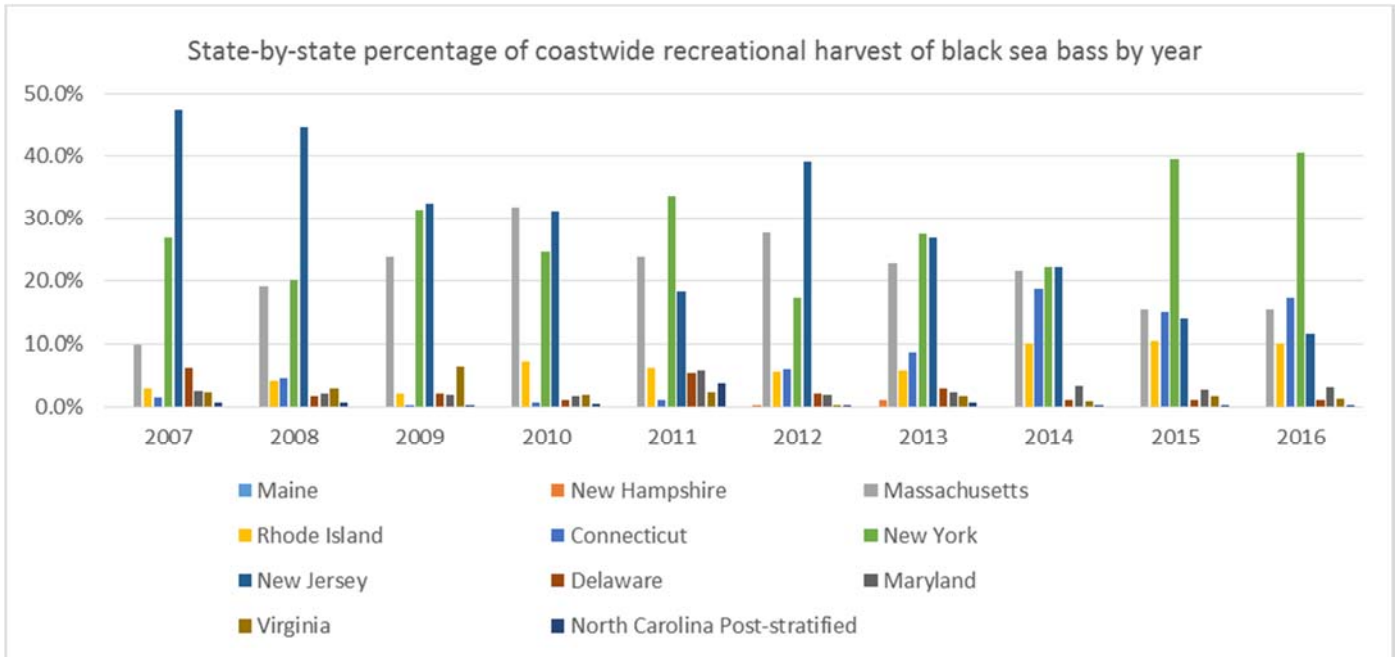


Figure 1. State-by-state contribution (as a percentage) to total recreational harvest of black sea bass (in numbers of fish, Maine through Cape Hatteras, North Carolina, 2007 through 2016).

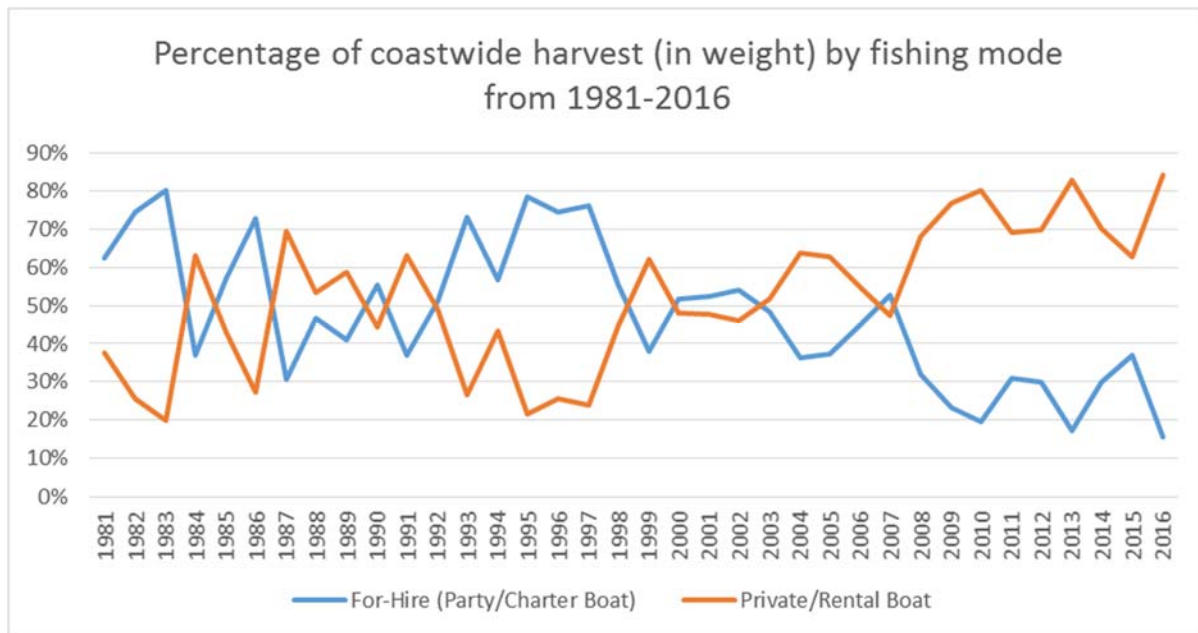


Figure 2. Percentage of coastwide harvest (in weight) by fishing mode from 1981-2016.

Status of the Stock

The last peer reviewed and accepted benchmark stock assessment was approved in December 2016 (SARC 62). The assessment indicated that the black sea bass sea bass stock north of Cape Hatteras, North Carolina was not overfished and overfishing was not occurring in 2015.

For modeling the black sea bass north of Cape Hatteras, the stock was partitioned into two sub-units at approximately Hudson Canyon to account for spatial differences in abundance and size at age. The sub-units are not considered to be separate stocks. Based on the assessment modelling, biomass is considered underestimated and the large 2011 year class is dominant in the northern area (north of Hudson Canyon) and less so in the south (south of Hudson Canyon). Although the stock was assessed by sub-unit, the combined results were put forth to develop reference points and harvest specifications.

Spawning stock biomass (SSB) averaged around 6 million pounds from the late 1980's and early 1990's and then steadily increased from 1997 to 2002 when it reached 18.7 million pounds. From 2007 on, the SSB has increased, reaching its highest level in 2015 (48.89 million pounds) (Figure 1). The fishing mortality rate (F) in 2015 was 0.27, below the fishing mortality threshold reference point (FMSY PROXY= F40%) of 0.36. Fishing mortality has been below the FMSY PROXY for the last five years. Model estimated recruitment was relatively constant throughout the time series except for large peaks from 1999 and 2011 year classes. Average recruitment of age 1 black sea bass from 1989–2015 equaled 24.3 million fish with the 1999 year class estimated at 37.3 fish and the 2011 year class estimated at 68.9 million fish.

Based on the stock assessment, the Board and Council set the 2017 RHL at 4.29 million pounds. In light of the projected decline in biomass in 2018, the 2018 RHL is set at 3.66 million pounds, an approximate 15% reduction from the 2017 RHL.

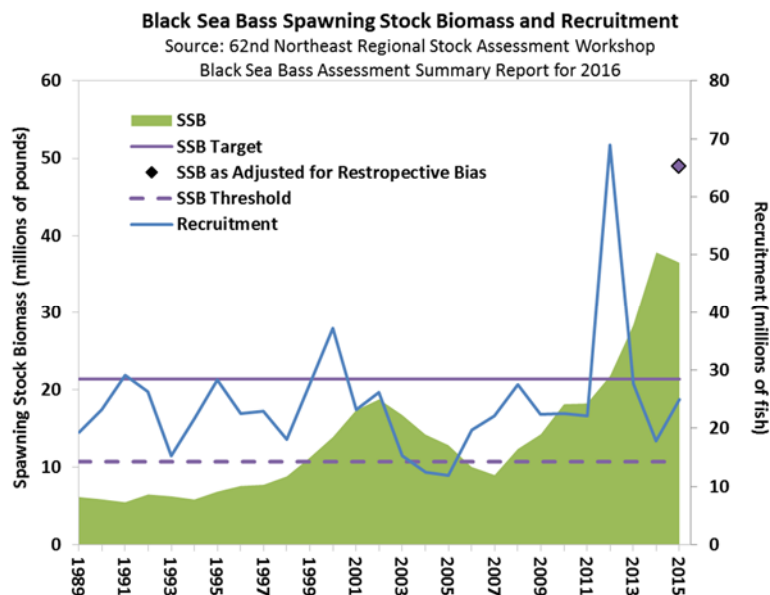


Figure 3. Black Sea Bass spawning stock biomass (SSB) and recruitment at age 0 by calendar year.

Proposed Management Program

The following options were developed from the Board motion from May 2017. The Black Sea Bass Working Group provided additional information for the Board to consider in selecting, removing, or further developing the options below. Again, these options can be further modified by the Board.

Option 1: Default Management Program

For 2018, a coastwide set of measures (size limit, possession limit, season length) would be specified in both state and federal waters to achieve the 2018 RHL.

Option 2: State Allocation of Annual RHL

For 2018, the RHL would be allocated to states. Each state would be responsible for developing measures that would constrain the harvest to their allocation. Adjacent states could voluntarily pool their allocations and coordinate on regulations that would constrain the combined harvest to their combined allocation. States will develop proposals for the Board to consider for approval no later than the 2018 ASMFC Winter Meeting.

-Sub-Option 2A: Timeframes for specifying state allocation

Under this specification, harvest data would be used to determine each state's share of the annual RHL. One of the following timeframe options would be used to base harvest allocations:

- A) Entire time series (1981-2016)
- B) 1997-2016 (20 years)
- C) 2007-2016 (10 years)
- D) 2012-2016 (5 years)

Black Sea Bass Rec WG comments to the Board

A majority of WG members preferred to have this option removed, though not all members. If this option were to be included in the draft addendum, Rec WG members noted that that Sub-Option timeframes 'A) Entire times series (1981-2016)' and 'B) 1997-2016 (20 years)' should be removed. Reasons cited were that timeframes the go back further than 10 years are not representative of current stock condition and/or abundance. Additional concerns were raised regarding the 2016 harvest estimates being used due to what many WG members perceive to be New York's anomalous wave 6 (November 1-December 31) data. Some WG members indicated that a smoothing or normalizing of NY's wave 6 data needs to occur before 2016 data can be used to determine allocations. One potential change offered was to remove 2016 data from possible time series options as whole or modify the options above to be the following:

- A) 2007-2016 with NY Wave 6 data correction
- B) 2007-2015
- C) 2012-2016 with NY wave 6 data correction
- D) 2012-2015

** Based on Rec WG comments below, time series data & percentage share for state allocation of new Options B and D are included in Appendix 1. **

Additionally, the Rec WG members wanted to provide the Board with the following advantages and challenges regarding the state-by-state allocation option:

- Advantages
 - Each state has an annual allocation to work from & to be evaluated against, thus providing individual accountability for the effectiveness of regulations that a state implements
 - Measures can be crafted to the states' unique needs
 - States which have seasons that conclude before year's end (e.g., no Wave 6 fishery) can craft subsequent year rules sooner (because don't have to wait for Wave 6 harvest estimates from other states)
 - State allocations are an easily understood foundation for regulations (as opposed to ad hoc regional management)
- Challenges
 - MRIP data/timeliness of data release/how to evaluate annual performance of measures. This challenge is unique to summer flounder, scup, and black sea bass where prior year harvest is used to compare against a current year's coastwide RHL.
 - Could result in widely disparate regulations between states, including those that share waterbodies
 - State allocations based on harvest during a static timeframe could present problems in the future as stock and fishery dynamics change (such as occurred with recreational summer flounder)
 - Choosing the most appropriate time series of harvest to base allocation on (recent enough to reflect current black sea bass distribution and fishing effort without the time series influenced too much by strong year classes and restrictive regulations)
 - MRIP harvest estimates, the would-be basis for state allocations, are not without uncertainty and are constantly evolving (with a significant recalibration of past years' estimates expected in 2018)
 - State measures would only apply in state waters while NOAA Fisheries would still implement federal waters measures, because there is no provision in the FMP for lifting the federal waters measures in exchange for conservationally equivalent state measures for fishing in both state and federal waters (like for summer flounder).
 - Year to year consistency of regulations may be difficult (given swings in MRIP estimates) unless states act very conservatively

Option 3: Regional Allocation of Annual RHL

For 2018, the RHL would be allocated to regions. Each region would be responsible for developing measures that would constrain the harvest to their allocation. States within a region will develop proposals for the Board to consider for approval no later than the 2018 ASMFC Winter Meeting.

Sub-option 3A: Regional alignment

The following groupings would specify the regional alignment for regions & regional allocation in 2018.

- A) 2 Regions: Massachusetts through New Jersey (North Region); Delaware through North Carolina north of Cape Hatteras (South region). This regional alignment was in place during ad hoc

regional management (2012-2017). They were based on the both amount of landings and area of harvest (state vs federal waters).

- B) 2 Regions: Massachusetts through New York (North Region); New Jersey through North Carolina north of Cape Hatteras (South region). This regional alignment is based in part on the results of the 2016 benchmark stock assessment, which indicated different levels of abundance for black sea bass in the New York bight north of Hudson Canyon.
- C) 3 Regions: Massachusetts through New York (North Region): New Jersey as a state specific region (New Jersey Region): Delaware through North Carolina north of Cape Hatteras (South region). This regional alignment is based in part on the results of the 2016 benchmark stock assessment, which indicated different levels of abundance for black sea bass in the New York bight north of Hudson Canyon. As the demarcation line of abundance is not fixed, this regional alignment seeks to allow New Jersey to set state level measures to address spatial variation in size and abundance of black sea bass along the New Jersey coast.
- D) 4 Regions: Massachusetts through Rhode Island (North Region): Connecticut through New York (Long Island Region): New Jersey as a state specific region (New Jersey Region): Delaware through North Carolina north of Cape Hatteras (South region). This regional alignment seeks to create more consistency between neighboring states and shared water bodies.

Sub-option 3B: Timeframes for specifying allocation

Under this specification, harvest data would be used to determine each state's share of the annual RHL. One of the following timeframe options would be used to base harvest allocations:

- A) Entire time series (1981-2016)
- B) 1997-2016 (20 years)
- C) 2007-2016 (10 years)
- D) 2012-2016 (5 years)

Sub-option 3C: Management measures within a region

- A) Uniform regulations within a region: the states within a region must implement a set of uniform management measures (size limit, possession limit, and season length).
- B) Regulatory standard with CE allowed: a uniform set of regulations is developed for a region, but states within the region can submit proposals for conservational equivalency regulations, although not to differ by more than 1" in size limit, 1 fish in possession limit, and 15 days in season length from the regulatory standard.
- C) Uniform percent reduction/liberalization within a region: the states within a region individually modify their regulations to increase or decrease harvest by the same percent although they must not differ by more than 1" in size limit, 1 fish in possession limit, and 15 days in season length

Black Sea Bass Rec WG comments to the Board

Rec WG members were generally more in favor of using regional management for managing black sea bass than state by state allocations for state waters. Regarding the potential timeframes to base regional allocations on, the same comments offered for state allocations apply to this option as well—specifically, that timeframes further back than 10 years from 2016 don't account for current stock abundance & distribution and concerns on the anomalous data for states such as New York in 2016 (see suggested new timeframes for regional allocation below). One Rec WG member indicated that larger regions (2+ state regions) should be considered rather than smaller ones (2 or less state regions) to aggregate MRIP harvest data better. Another Rec WG member suggested an option in which DE through NC remain a region and MA through NJ each be a region (i.e., have state allocations). There was general support for the concept of limiting the difference between states' regulations within a region if flexibility is permitted. The concept could be developed further to bound the difference in regulations between regions. *Guidance needed for regions where neighboring states are not in the same region*

Alternative timeframes to be considered for regional allocations to be based on:

- A) 2007-2016 with NY Wave 6 data correction
- B) 2007-2015
- C) 2012-2016 with NY wave 6 data correction
- D) 2012-2015

** Based on Rec WG comments below, time series data for state allocation of new Options B and D are included in Appendix 2.**

As with the state-by-state allocation option, the Rec WG members wanted to provide the Board with the following comments on advantages and challenges regarding the regional option:

- Advantages
 - Each region has an annual allocation to work from & be evaluated against
 - Regional allocations could address regional abundance and differences in black sea bass availability (small vs. large fish; year-round availability vs. seasonal availability)
 - Provides for more consistent regulations between states and shared water bodies (than state by state allocations)
 - Regional allocations are an easily understood foundation for regulations (as opposed to ad hoc regional management)
 - Regional management helps buffer against greater than projected harvest in any one state, possibly improving year-to-year consistency of regulations
- Challenges
 - MRIP data/timeliness of data release/how to evaluate annual performance of measures. This challenge is unique to summer flounder, scup, and black sea bass where prior year harvest is used to compare against a current year's coastwide RHL.

- Choosing the most appropriate time series of harvest to base allocations (recent enough to reflect current black sea bass distribution and fishing effort without the time series influenced too much by strong year classes and restrictive regulations)
- The potential for large difference in regulations between regions remains (unless some controls are added)
- Regional allocations based on harvest during a static timeframe could present problems in the future as stock condition or fishery dynamics change
- MRIP harvest estimates, the would-be basis for regional allocation, are not without uncertainty and are constantly evolving (with a significant recalibration of past year's estimates expected in 2018)
- Year to year consistency of regulations may be difficult (given swings in MRIP estimates) unless regions collectively act more conservatively

Other considerations:

- A sub-option dealing with accountability for both state by state and regional allocations was discussed by the Rec WG members. While some members felt having some type of accountability was needed for black sea bass recreational management, nearly all members were not in favor of having percentage or pound-for-pound paybacks due to issues with MRIP data.
- One BSB Rec WG member indicated interest in having total catch be evaluated (A+B1+B2)
- One BSB Rec WG member indicated that regional allocations should possibly be based on the size of the angling population and availability of black sea bass to those anglers, not on past harvest.
- Many BSB Rec WG members indicated a preference for going to multi-year averaging of MRIP data to evaluate harvest, rather than terminal year estimates
- One BSB Rec WG member indicated if allocations went into effect, they need to be revisited regularly, if not annually.
- A number of BSB Rec WG members were in favor using a 'common sense' set of measures that states and/or regions could develop or derive Conservation Equivalency measures from.
- BSB Rec WG members indicated that F based management could be something done in the future, but not in 2018 based on MAFMC staff feedback.
- Building on the idea of a set of 'common sense' measures, one Rec WG member offered that possible set of regional measures could start at the following: Massachusetts-New York, 5 fish at 15" minimum size; New Jersey at 10 fish at 13" minimum size; Delaware-North Carolina 15 fish at 12.5" minimum size. All regions would have a year round open season. Though it should be noted, the WG member does not think the approach will achieve the approximate 14% reduction needed to achieve the 2018 RHL relative to the 2017 RHL.

Timeframe for Addendum provisions

Option 1: 1 year (2018 only)

The management program outlined in section 3.0 will be in place for 2018 only. After 2018 measures would revert back to the FMP status quo of coastwide measures.

Option 2: 2 years (2018-2019)

The management program outlined in section 3.0 will be in place for 2018. The Board could take action, through a Board vote, to extend the addendum for one year, expiring at the end of 2019. After 2019, measures would revert back to the FMP status quo of coastwide measures.

Option 3: 3 years (2018-2020)

The management program outlined in section 3.0 will be in place for 2018. The Board could take action, through a Board vote, to extend the addendum for up to two years, expiring at the end of 2020. After 2020, measures would revert back to the FMP status quo of coastwide measures.

Appendix I. State by State Allocation Scenarios

Table 5. State by state recreational harvest of black sea bass (in numbers of fish) from 2007-2015 and percentage allocation

| State | Harvest | Percentage Allocation |
|-----------------------------------|------------|-----------------------|
| Maine | 0 | 0.0% |
| New Hampshire | 15,478 | 0.1% |
| Massachusetts | 3,334,449 | 22.0% |
| Rhode Island | 968,298 | 6.4% |
| Connecticut | 1,056,176 | 7.0% |
| New York | 4,073,739 | 26.9% |
| New Jersey | 4,582,484 | 30.3% |
| Delaware | 340,578 | 2.2% |
| Maryland | 370,500 | 2.4% |
| Virginia | 320,620 | 2.1% |
| North Carolina Post-stratified | 77,284 | 0.5% |
| Total | 15,139,606 | 100% |

Table 6. State by state recreational harvest of black sea bass (in numbers of fish) from 2012-2015 and percentage allocation

| State | Harvest | Percentage Allocation |
|-----------------------------------|-----------|-----------------------|
| Maine | 0 | 0.0% |
| New Hampshire | 15,478 | 0.2% |
| Massachusetts | 1,611,241 | 21.5% |
| Rhode Island | 625,369 | 8.4% |
| Connecticut | 948,326 | 12.7% |
| New York | 2,020,332 | 27.0% |
| New Jersey | 1,858,965 | 24.8% |
| Delaware | 123,476 | 1.6% |
| Maryland | 188,857 | 2.5% |
| Virginia | 82,936 | 1.1% |
| North Carolina Post-stratified | 14,282 | 0.2% |
| Total | 7,489,262 | 100% |

Appendix II. Regional Allocation Scenarios

Please note: harvest from Maine and New Hampshire are used in coastwide time series numbers

- 2 Regions: Massachusetts through New Jersey (North Region); Delaware through North Carolina north of Cape Hatteras (South region).

Table 7. Time Series Option B 2007-2015 Harvest in numbers of fish

| Regions | State by State Harvest | Regional Harvest | Percentage Allocation |
|-----------------------------------|------------------------|------------------|-----------------------|
| Massachusetts | 3,334,449 | 14,015,146 | 92.6% |
| Rhode Island | 968,298 | | |
| Connecticut | 1,056,176 | | |
| New York | 4,073,739 | | |
| New Jersey | 4,582,484 | | |
| Delaware | 340,578 | 1,108,982 | 7.3% |
| Maryland | 370,500 | | |
| Virginia | 320,620 | | |
| North Carolina Post-stratified | 77,284 | | |

Table 8. Time Series Option D 2012-2015 Harvest in numbers of fish

| Regions | State by State | Regional Harvest | Percentage Allocation |
|-----------------------------------|----------------|------------------|-----------------------|
| Massachusetts | 1,611,241 | 7,064,233 | 94.3% |
| Rhode Island | 625,369 | | |
| Connecticut | 948,326 | | |
| New York | 2,020,332 | | |
| New Jersey | 1,858,965 | | |
| Delaware | 123,476 | 409,551 | 5.5% |
| Maryland | 188,857 | | |
| Virginia | 82,936 | | |
| North Carolina Post-stratified | 14,282 | | |

2) 2 Regions: Massachusetts through New York (North Region); New Jersey through North Carolina north of Cape Hatteras (South region).

Table 9. Time Series Option B 2007-2015 Harvest in numbers of fish

| Regions | State by State Harvest | Regional Harvest | Percentage Allocation |
|--------------------------------|-------------------------------|-------------------------|------------------------------|
| Massachusetts | 3,334,449 | 9,432,662 | 62.3% |
| Rhode Island | 968,298 | | |
| Connecticut | 1,056,176 | | |
| New York | 4,073,739 | | |
| New Jersey | 4,582,484 | 5,691,466 | 37.6% |
| Delaware | 340,578 | | |
| Maryland | 370,500 | | |
| Virginia | 320,620 | | |
| North Carolina Post-stratified | 77,284 | | |

Table 10. Time Series Option D 2012-2015 Harvest in numbers of fish

| Regions | State by State | Regional Harvest | Percentage Allocation |
|--------------------------------|-----------------------|-------------------------|------------------------------|
| Massachusetts | 1,611,241 | 5,205,268 | 69.5% |
| Rhode Island | 625,369 | | |
| Connecticut | 948,326 | | |
| New York | 2,020,332 | | |
| New Jersey | 1,858,965 | 2,268,516 | 30.3% |
| Delaware | 123,476 | | |
| Maryland | 188,857 | | |
| Virginia | 82,936 | | |
| North Carolina Post-stratified | 14,282 | | |

3) 3 Regions: Massachusetts through New York (North Region): New Jersey as a state specific region (New Jersey Region): Delaware through North Carolina north of Cape Hatteras (South region).

Table 11. Time Series Option B 2007-2015 Harvest in numbers of fish

| Regions | State by State Harvest | Regional Harvest | Percentage Allocation |
|--------------------------------|------------------------|------------------|-----------------------|
| Massachusetts | 3,334,449 | 9,432,662 | 62.3% |
| Rhode Island | 968,298 | | |
| Connecticut | 1,056,176 | | |
| New York | 4,073,739 | | |
| New Jersey | 4,582,484 | 4,582,484 | 30.3% |
| Delaware | 340,578 | 1,108,982 | 7.3% |
| Maryland | 370,500 | | |
| Virginia | 320,620 | | |
| North Carolina Post-stratified | 77,284 | | |

Table 12. Time Series Option D 2012-2015 Harvest in numbers of fish

| Regions | State by State | Regional Harvest | Percentage Allocation |
|--------------------------------|----------------|------------------|-----------------------|
| Massachusetts | 1,611,241 | 5,205,268 | 69.5% |
| Rhode Island | 625,369 | | |
| Connecticut | 948,326 | | |
| New York | 2,020,332 | | |
| New Jersey | 1,858,965 | 1,858,965 | 24.8% |
| Delaware | 123,476 | 409,551 | 5.5% |
| Maryland | 188,857 | | |
| Virginia | 82,936 | | |
| North Carolina Post-stratified | 14,282 | | |

- 4) 4 Regions: Massachusetts through Rhode Island (North Region): Connecticut through New York (Long Island Region): New Jersey as a state specific region (New Jersey Region): Delaware through North Carolina north of Cape Hatteras (South region).

Table 13. Time Series Option B 2007-2015 Harvest in numbers of fish

| Regions | State by State Harvest | Regional Harvest | Percentage Allocation |
|--------------------------------|------------------------|------------------|-----------------------|
| Massachusetts | 3,334,449 | 4,302,747 | 28.4% |
| Rhode Island | 968,298 | | |
| Connecticut | 1,056,176 | 5,129,915 | 33.9% |
| New York | 4,073,739 | | |
| New Jersey | 4,582,484 | 4,582,484 | 30.3% |
| Delaware | 340,578 | 1,108,982 | 7.3% |
| Maryland | 370,500 | | |
| Virginia | 320,620 | | |
| North Carolina Post-stratified | 77,284 | | |

Table 14. Time Series Option D 2012-2015 Harvest in numbers of fish

| Regions | State by State | Regional Harvest | Percentage Allocation |
|--------------------------------|----------------|------------------|-----------------------|
| Massachusetts | 1,611,241 | 2,236,610 | 29.9% |
| Rhode Island | 625,369 | | |
| Connecticut | 948,326 | 2,968,658 | 39.6% |
| New York | 2,020,332 | | |
| New Jersey | 1,858,965 | 1,858,965 | 24.8% |
| Delaware | 123,476 | 409,551 | 5.5% |
| Maryland | 188,857 | | |
| Virginia | 82,936 | | |
| North Carolina Post-stratified | 14,282 | | |



Atlantic States Marine Fisheries Commission

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MEMORANDUM

July 25, 2017

To: Summer Flounder, Scup, and Black Sea Bass Management Board
From: Kirby Rootes-Murdy, Senior FMP Coordinator
RE: Summer Flounder Working Group Draft Prospectus

Introduction

The Board briefly discussed the idea of further evaluating recreational management options for summer flounder recreational management in the short and long term during the ASMFC Spring Meeting in May 2017.

The following prospectus was developed and discussed by the Summer Flounder Recreational Working Group (Rec WG) on conference calls on June 22nd and July 20th. The group provided feedback on short term management ideas, but little to no feedback on several broad category issues under the longer term management strategy due to the call running over time.

Short-Term Strategy

1. Develop new draft Addendum to address management of the fishery in 2018

Discussion summary: Generally, the Summer Flounder Rec WG was in agreement with continuing a regional management approach similar to the regional alignment that was in place in 2017. Rec WG members discussed the challenges of moving to a different approach from the currently available recreational management approaches in the Fishery Management Plan of either (1) coastwide measures; 2) state by state allocations and measures; or 3) recent regional management addenda. One new idea that was offered up was to create a coastwide set of measures that then each state/region could alter/adjust to meet needs of stakeholders in the region. It was unclear how this new approach would work relative to the current joint management process.

In seeking to get at more specificity for how recreational summer flounder management would be in 2018, the following items were discussed to clarify how the new addendum would differ from current 2017 management.

a. Based on 2018 RHL.

The Rec WG members are interested in moving to evaluate annual coastwide harvest relative to the coastwide RHL from a true harvest limit to one of a 'soft' target. Interest in this approach builds on previous arguments made on the timeliness of when data becomes available, the imprecision of MRIP estimates, and the recent year's management process where the Board approved Addendum XXVIII with the understanding that it may not reach

the 41% reduction needed to constrain harvest in 2017 to the coastwide RHL. It was noted that going to this approach may present challenges in joint management given the accountability measures (AMs) the Mid-Atlantic Fishery Management Council has for summer flounder, scup, and black sea bass, and that moving to a 'soft' target may in turn trigger AMs if there are consistent overages of the RHL and the resource continues to experience overfishing. One Rec WG member requested that a total fishing mortality be used for evaluating fishery performance rather than just harvest (A+B1); due to the call length, this option was not discussed in great detail.

b. Consider 2-year timeframe (2018 & 2019).

Rec WG members did not reach consensus on whether a new addendum should address management for more than one year. Many Rec WG members indicated that if an addendum were initiated, it should be crafted specifically to the 2018 RHL. Commission staff noted that the current Addendum XXVIII can be extended for an additional year (expiring on December 31, 2018) but that language in the current Addendum is vague in providing guidance on crafting specific regional management measures for 2018.

c. Pursue use of confidence intervals, in lieu of point source estimates, potentially over multiple years, for assessing 2017 harvest and projecting 2018 harvest. Consider assessing harvests over two or more years (e.g., 2017, 2016, 2015)

The Rec WG members discussed the idea of moving to using a multi-year averaging approach for evaluating harvest against the coastwide RHL instead of the current annual evaluation of preliminary data in the current terminal year. This idea builds on feedback the Technical Committee (TC) provided in evaluating harvest both for summer flounder and black sea bass in recent memos to the Board. But, the TC has not fully developed this methodology across species or specifically for summer flounder. Additionally, the recent fluctuations in the both coastwide RHLs from 2014-2017 and harvest estimates from 2014-2016 presents significant challenges as there have been few constants in the fishery with the exception of the measures. Had either harvest or the coastwide RHLs remained constant, multiple year averaging may be more a viable option for a new addendum. For the immediate short term, the Summer Flounder Rec WG recommends staying with current evaluation of preliminary harvest estimate data (i.e. 2017) as it becomes available over the year (i.e. preliminary wave 4 data available in October 2017). It was noted that for summer flounder, harvest projections through the end of year based on preliminary data through wave 4 (July through August) have been fairly stable and accurate in recent years and the group anticipates that to be true in 2017 as well.

d. Use same regional framework as Addendum 28, or revised? If revised, in what way(s)?

Rec WG members discussed whether a new set of regions or regional alignment should be considered for 2018. After discussing the challenges and benefits of all states within a region having the same measures, and the group put forward no other regional ideas and suggested that the same region from 2016-2017 be maintained for 2018.

e. Re-boot same/similar prescriptive regional regs as set forth under Addendum 28 -- aimed at achieving more coastwide consistency – while allowing for regions to develop Conservation Equivalency (C/E) alternatives?

Continuing points raised for item d, the group discussed whether a different approach should be taken for crafting regional measures for 2018. Group members pointed out the inherent struggle with regional management is seeking to allow state & regional flexibility in crafting measures while having consistency in measures within a region, as well a standard to have measures be evaluated against. It was pointed out that prior to regional management in 2014, states needed to submit to the TC (and subsequently the Board) Conservation Equivalency (CE) proposals to achieve their state allocation prior to the annual ASMFC Winter Meeting. While there was interest in moving to a more 'timely' submission of CE proposals than those that were submitted in 2017 (Massachusetts and Rhode Island in February; New Jersey in May) the group did not put forward a new date by which CE proposals would need to be submitted by under regional management.

f. Or establish regional targets, allowing regions to tailor their regs, via C/E, to meet regional needs and interests?

In discussing regional targets, some group members offered up that for 2018 management, states/regions could use their 2017 measures and subsequent harvest level as a proxy target to develop 2018 measures. For the prior 3 years (2014-2016), state measures remained nearly constant/unchanged with the exception of New Jersey measures in DE Bay in 2016. Many in the group indicated hesitation in developing any more formal regional targets due to concerns that would be become 'de-facto' allocations. Group members did acknowledge that the regional management measures that have been in place in recent years for summer flounder have become effectively allocations. One group member did offer up that taking into account catch (A+B1+B2) rather than just harvest (B1+B2) should be explored further given interest in addressing the current fishing mortality.

g. Allow for/encourage separate measures for shore-based, general category, and for-hire fisheries?

The Rec WG indicated that generally they are against creating a separate measures by fishing sector or mode due to increasing complexity in measures as well in evaluating the measures effectiveness. The group did voice interest in maintaining the shore based mode that has been place for states such as New Jersey and Connecticut in recent years.

2. Present recommendations to Board at Aug 2017 meeting. If the Board initiates a draft addendum on summer flounder recreational management in 2018, the following tentative schedule would play out:

- a. Draft Addendum presented for Board Review at Oct 2017 Annual meeting. Board could approve the Draft Addendum for public comment at the Annual Meeting. Depending on timing, the Draft Addendum may be combined with Addendum XXX on**

2018 recreational management (initiated in May 2017 at the Joint ASMFC/MAFMC meeting)

b. After public comment, the Board could then approve final Addendum at either Dec 2017 Joint meeting or Feb 2018 ASMFC Board meeting

After the group discussed the ideas of using the terminal year's data and not use a multiple year averaging approach to evaluate harvest, Commission staff pointed out that this timetable would no longer be feasible as preliminary data through wave 4 is not available until mid-October, during or after the ASMFC Annual Meeting.

One Rec WG member offered the following alternative approach for setting the 2018 summer flounder recreational management measures:

- 1) Set 2018 quota at August 2017 joint meeting (has been previously set with no changes recommended by SSC so no change likely this year but many August's would include this quota setting process)
- 2) In December of 2017, rather than use Preliminary estimates of 2017 harvest, assume the 2017 harvest to be equal to the RHL adjusted by average overage/underage of the measures relative to the RHL from the previous 3 years (2014-2016). Also calculate an upper and lower bound based on CI/PSE.
- 3) If the 2018 RHL is within the bounds of the number calculated in 2) then no change in rec measures would occur. If the 2018 RHL is higher than the upper bound of the number calculated in 2), then allow for a liberalization of the difference between the 2018 RHL and the upper bound. If the 2018 RHL is lower than the lower bound of the number calculated in 2), then require regulations to become more restrictive by the difference between the 2018 RHL and the lower bound.

Longer-Term Strategy

- I. Undertake new benchmark stock assessment, integrating to the extent possible all emerging scientific/biological studies and evaluation (Fall 2018)
- II. Evaluate and consider adopting an F-based management approach for the recreational summer flounder fishery (Summer 2018)
 - a. Via RFP administered by MAFMC
 - b. Aim is to help to stabilize the fishery – making adjustments as needed, but not based on annual cycles of point-based estimates and projections and hard targets.
 - c. Combine with management strategy evaluation?
 - d. Utilize new approach to establish multi-year specifications and associated regulations, e.g., 3-year or 5-year periods
 - e. Consider, in advance, what such an approach would/could mean in terms of configuring future management programs.
- III. Improve the assessment and use of recreational catch and effort [harvest] data (ongoing)
 - a. Address the impacts of MRIP recalibration
 - b. Mitigate the variability of MRIP data for management use
 - c. Evaluate opportunities to integrate/more fully utilize VTRs from for-hire sector and voluntary angler logbook data
 - d. Evaluate opportunities to assess catch over multiple years, e.g., 3-year or 5-year periods [factoring in stock conditions]
 - e. Evaluate opportunities to apply confidence intervals to catch estimates
- IV. Undertaking visioning exercise(s) to address and plan for program development in future years (ongoing). Example issues include:
 - a. Regulatory consistency vs. regulatory flexibility
 - b. Standards/criteria for achieving fair and equitable access to the resource
 - i. Based on resource distribution and abundance (i.e., catchability)?
 - ii. Based on angler distribution and abundance (i.e., effort)?
 - iii. Based on achieving some baseline angling opportunity or success rate?
 - c. State (1998-based or something else) vs. regional
 - d. Shore-Based vs. General Category vs. For-Hire
 - e. Minimizing discard mortality
 - f. Use of targets/allocations that reflect differentiations in the distribution, abundance and size composition of the stock [i.e., resource availability or catchability] and the associated fisheries [i.e., effort levels and angler demographics]
 - g. Use of seasons, rather than bag or size, to scale the fisheries in each region/state.

- h. Setting measures that are relative up and down the coast, reflect the biological availability of the species based on size and season, accommodate industry concerns, and promote "success rate."
- i. Reporting: Consider making mandatory for for-hire sector [electronic w/ some proportion undergoing dockside validation]; and incentive-based for shore-based and General Category sectors (e.g., bonus fish if voluntarily report)
- j. Coordinating fluke, sea bass and scup fisheries within each region to best address the needs and interests of the rec fishing community within each region.



Atlantic States Marine Fisheries Commission

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703.842.0740 • 703.842.0741 (fax) • www.asmfmc.org

MEMORANDUM

TO: Tautog Management Board
FROM: Toni Kerns ISFMP Director
DATE: July 25, 2017
SUBJECT: Public Comment on Tautog Draft Amendment I

The following pages represent a summary of all comments received by ASMFC on American draft Amendment I to the Tautog FMP as of 5:00 PM (EST) on July 14, 2017 (closing deadline).

A total of 145 written comments were received on Draft Amendment I. Of those comments, 8 were from organizations, 21 were from individuals, 2 form letters (one with 4 copies and one with 3 copies) and 1 petition with 317 signatures. Public hearings were held in 8 jurisdictions. Approximately 167 individuals attended the hearings.

The following tables (pages 2-10) are provided to give the Board an overview of the support for specific options and issues contained in Draft Amendment I. This is then followed by written comment (individual, groups, and form letters). Public Hearing summaries were provided in briefing materials.

Public Comment Summary Tables

| FMP Goals (pg 48-49) | Option A: Maintain the 1996 Goals (A-E) | Option B: Revised Goal Statement |
|-----------------------------|-----------------------------------------|----------------------------------|
| Written Comments | | |
| Individual Letters | 2 | |
| Groups/Organization Letters | 3 | 1 |
| Form Letters | | |
| Hearings | | |
| MA | X | |
| RI | | X |
| CT | | |
| NY | | |
| NJ | | |
| DE | | |
| MD | | X |
| VA | | |

| Objectives(Pg49-51) | Option A: Maintain the 1996 objectives (A-J) | Option B: Suggest modifying or removing select objectives - F and SSB Targets | Option C: Suggest modifying or removing select objectives - Regional management | Option D: Suggest modifying or removing select objectives - EEZ management | Option E: Suggest modifying or removing select objectives - Habitat | Option F: Suggest modifying or removing select objectives - Monitoring | Option G: Suggest modifying or removing select objectives - Illegal harvest | Option H: Insert all modifications identified under Options B-G |
|----------------------------|----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------|
| Written Comments | | | | | | | | |
| Individual Letters | 2 | | | | | | 1 | |
| Group/Organization Letters | 3 | | | | 1 | 1 | 2 | |
| Form Letters | | | | | | | | |
| Hearings | | | | | | | | |
| MA | | | | | | | | |
| RI | | | | | | | | |
| CT | | | | | | | | |
| NY | | | | | | | | |
| NJ | | | | | | | | |
| DE | | | | | | | | |
| MD | | | | | | | | X |
| VA | | | | | | | | 1 |

| Biological Reference Points (Pg 53-54) | Option A: Status Quo - Reference Points can be Modified via a Management Document | Option B: Reference Points can be Modified via Board Action (i.e., Management Document Not Required) |
|-----------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Written Comments | | |
| Individual Letters | 2 | |
| Group/Organization Letters | 5 | |
| Form Letters | | |
| Hearings | | |
| MA | | |
| RI | | no objection |
| CT | | |
| NY | | |
| NJ | | |
| DE | | |
| MD | 1 | 1 |
| VA | | 1 |

| F Target (pg 54-55) | Option A: Status Quo | Option B: Managing to the Regional Target F | Sub-Option B1: No time requirement | Sub-Option B2: Board action within one year | Sub-Option B3: Board action within two years |
|----------------------------|-----------------------------|----------------------------------------------------|-------------------------------------------|----------------------------------------------------|-----------------------------------------------------|
| Written Comments | | | | | |
| Individual Letters | 2 | | | | |
| Group/Organization Letters | 3 | 1 | 1 | 1 | |
| Form Letters | | | | | |
| Hearings | | | | | |
| MA | | | | | |
| RI | 1 | | | | |
| CT | | | | | |
| NY | | | | | |
| NJ | | | | | |
| DE | | | | | |
| MD | | 5 | | 1 | 3 |
| VA | | 1 | | x | |

| Probability of Achieving F Target (pg 55) | Option A: Status Quo | Option B: 50% Probability of Achieving F Target |
|-------------------------------------------|----------------------|-------------------------------------------------|
| Written Comments | | |
| Individual Letters | 2 | |
| Group/Organization Letters | 4 | 1 |
| Form Letters | | |
| Hearings | | |
| MA | | 1 |
| RI | | x |
| CT | | |
| NY | | |
| NJ | | |
| DE | | |
| MD | 2 | |
| VA | | 1 |

| F Rebuilding Schedule (pg 55-56) | Option A: Status Quo | Option B: Three Years | Option C: Five Years |
|----------------------------------|----------------------|-----------------------|----------------------|
| Written Comments | | | |
| Individual Letters | 2 | | |
| Group/Organization Letters | 24 | 1 | |
| Form Letters | | | |
| Hearings | | | |
| MA | | x | |
| RI | | 1 | |
| CT | | | |
| NY | | | |
| NJ | | | |
| DE | | | |
| MD | | | 3 |
| VA | | 1 | |

Other Comments: Overfishing should be ended immediately.

| Stock Rebuilding Schedule (pg 56) | Option A: Status Quo (from Addendum IV) | Option B: Stock Rebuilding Schedule can be Developed via an Addendum | Option C: Stock Rebuilding Schedule can be Developed via an Addendum, NTE 10 years |
|-----------------------------------|-----------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Written Comments | | | |
| Individual Letters | 2 | | |
| Group/Organization Letters | 3 | 1 | 1 |
| Form Letters | | | |
| Hearings | | | |
| MA | | x | |
| RI | | | |
| CT | | | |
| NY | | | |
| NJ | | | |
| DE | | | |
| MD | | 3 | |
| VA | | | 1 |

| Regional Management (pg 65-66) | Option A: Status Quo - Coastwide Management | Option B: Regional Management | Sub-Option B1: LIS line from Montauk Pt, NY to Watch Hill, RI | Sub-Option B2: LIS line from Orient Pt, NY to Watch Hill, RI |
|--------------------------------|---------------------------------------------|-------------------------------|---------------------------------------------------------------|--------------------------------------------------------------|
| Written Comments | | | | |
| Individual Letters | 2 | 5 | 1 | |
| Group/Organization Letters | 3 | 2 | 1 | |
| Form Letters | | | | |
| Hearings | | | | |
| MA | | x | | |
| RI | | x | | |
| CT | x | | 1 | |
| NY | 79 | | | |
| NJ | | | 2 | |
| DE | | x | | |
| MD | | | 10 | |
| VA | | | 1 | |

Other Comments:

- Defer action until a more reasonable approach can be determined to not split NY in the middle of the state.
- Favor the regional approach but do not favor an unenforceable regulation where a state is split. Favor regions but thinks NJ should be in a region with Delaware.
- No region should face such a large reduction as LIS (48-50%).

| MARI Rec Management Measures | Option A: Status Quo | Option B: All Measures Consistent - 3 fish poss limit in Mar-May and Aug-Oct 14, 4 fish Oct 15-Dec 31 | Option C: All measures consistent - 3 fish poss limit |
|------------------------------|----------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Written Comments | | | |
| Individual Letters | 4 | | |
| Group/Organization Letters | 3 | | |
| Form Letters | | | |
| Hearings | | | |
| MA | | | |
| RI | x | | |
| CT | | | |
| NY | | | |
| NJ | | | |
| DE | | | |
| MD | | | |
| VA | | | |

Other Comments:

Propose 6 fish bag limit Sept-Dec and April-May, and 1 fish all other times of the year

| LIS Rec Measures | Option A1: State Specific Reductions to Current Measures | Option B1: Regional 16", 1 Fish, Apr (CT), Oct-Dec (CT & NY) | Option B2: Regional 17", 2 Fish, Apr (CT), Aug (CT), Oct-Dec (CT & NY) | Option B3: Regional 16", 1 Fish, Oct-Nov (CT & NY) | Option C: Recreational Slot Limit 16-18" |
|----------------------------|----------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------|------------------------------------------|
| Written Comments | | | | | |
| Individual Letters | 3 | | | | |
| Group/Organization Letters | | | | | |
| Form Letters | | | | | |
| Hearings | | | | | |
| MA | | | | | |
| RI | | | | | |
| CT | | | | | |
| NY | | | | | |
| NJ | | | | | |
| DE | | | | | |
| MD | | | | | |
| VA | | | | | |

Other Comments:

- Favor status quo measures.
- Believe that the data used as a basis for setting the allowable catch limit (ACL), bag limit and season is inaccurate.
- If implemented, it will lead to overly restrictive regulation that will have a negative effect on the local economy while not effectively protecting the stock.
- Provide measures to the for-hire fleet that are more generous than measures for private boats
- Protect fish during the spawning season.

- Dropping the bag to 4 fish will be very hard on the for-hire fleet any lower will be devastating. Separate the regulations for the for-hire fleet. Eliminate the spring and summer fishery in CT and shorten the fall in both states. Put in a slot limit of 16-22" to protect the large egg-bearing females.

| LIS Commercial Measures | Option A1: State Specific Reductions to Current Measures | Option B1: Regional 16" min size, commercial quota | Option B2: Regional 16" min size, status quo | Option C: Commercial slot limit, 16-18" |
|----------------------------|----------------------------------------------------------|----------------------------------------------------|----------------------------------------------|-----------------------------------------|
| Written Comments | | | | |
| Individual Letters | 3 | | | |
| Group/Organization Letters | | | | |
| Form Letters | | | | |
| Hearings | | | | |
| MA | | | | |
| RI | | | | |
| CT | | | | |
| NY | | | | |
| NJ | | | | |
| DE | | | | |
| MD | | | | |
| VA | | | | |

Other Comments:

Restrict Commercial fishing to a daily possession limit equal to the recreational fishery. Restrict the type of gear Commercial fishermen may use, specifically rod and reel. Include closure for spawning. Ban the sale of live tautog. The Commercial Lobster fishery is allowed to take too many tautog as bycatch in their pots.

Close the commercial pot fishery especially in the spring. Possession limit should be similar to the recreational fishery and have options for spawning closures.

| NYNJ Recreational Measures | Option A1: State-specific reductions to current measures | Option B1: 15" min, 4 fish bag | Option B2: 16" min, 4 or 6 bag limit | Option C1: Recreational slot limit 15-18", 4 fish bag limit |
|----------------------------|----------------------------------------------------------|--------------------------------|--------------------------------------|-------------------------------------------------------------|
| Written Comments | | | | |
| Individual Letters | 3 | | | |
| Group/Organization Letters | 2 | | | |
| Form Letters | | | | |
| Hearings | | | | |
| MA | | | | |
| RI | | | | |
| CT | | | | |
| NY | | | | |
| NJ | | | | do not favor |
| DE | | | | |
| MD | | | | |
| VA | | | | |

Other Comments:

- Opposed to option B2, would be disaster for rebuilding biomass at Barnegat Light.
- C1 is Okay, but ending March 31 would eliminate the shore angler. Against a slot limit and opposed to an August and September closure.
- Propose Bay versus ocean regulations (like striped bass).

| NYNJ Commercial Measures | Option A1: State-specific reductions to current measures | Option B1: 15" min, 28 fish bag NYB, no bag in NJ | Option B2: 16" min, 31 fish bag NYB, no bag in NJ | Option B3: 15" min, 65,486 lb quota NYB, 23,529 lb quota NJ | Option C2: Commercial slot limit 15-18", 34 fish bag NYB, no bag NJ |
|----------------------------|----------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------|
| Written Comments | | | | | |
| Individual Letters | 3 | | | | |
| Group/Organization Letters | 1 | | | | |
| Form Letters | | | | | |
| Hearings | | | | | |
| MA | | | | | |
| RI | | | | | |
| CT | | | | | |
| NY | | | | | |
| NJ | | | | | |
| DE | | | | | |
| MD | | | | | |
| VA | | | | | |

Other Comments:

Possession limit should be similar to the recreational fishery and have options for spawning closures

| DelMarVa Recreational Measures | Option A: Status Quo | Option B: Spwn Closure May & June; 4 fish bag all states, 15" min size DE, 16" VA & MD | Option C: Spwn Closure May & June; 5 fish bag DE Jul-Mar, 4 fish bag MD, 3 fish bag VA, 16" all states | Option D: Spwn Closure May & June; 4 fish bag & 16" min size all states |
|--------------------------------|----------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Written Comments | | | | |
| Individual Letters | 3 | | | |
| Group/Organization Letters | | | | |
| Form Letters | | | | |
| Hearings | | | | |
| MA | | | | |
| RI | | | | |
| CT | | | | |
| NY | | | | |
| NJ | | | | |
| DE | | | x | |
| MD | | x | | favor a modified D |
| VA | | | | 1 |

| DelMarVa Commercial Measures | Option A: Status Quo | Option B: Modified rec measures for DE and MD implemented as com measures; VA remains status quo |
|-------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------|
| Written Comments | | |
| Individual Letters | 3 | |
| Group/Organization Letters | | |
| Form Letters | | |
| Hearings | | |
| MA | | |
| RI | | |
| CT | | |
| NY | | |
| NJ | | |
| DE | | |
| MD | | |
| VA | | 1 |

| Commercial Quota | Option A: Status Quo | Option B: Commercial Quota Procedures |
|----------------------------|-----------------------------|----------------------------------------------|
| Written Comments | | |
| Individual Letters | 3 | |
| Group/Organization Letters | 1 | |
| Form Letters | | |
| Hearings | | |
| MA | | |
| RI | | 2 |
| CT | | |
| NY | | |
| NJ | | |
| DE | | |
| MD | | x |
| VA | | 1 |

| Commercial Tagging Program and Tag Application | Option A: Status Quo | Option B: Implement a Commercial Harvest Tagging Program | Option A: Harvester Application at Harvest or Upon Landing | Option B: Application by Dealer |
|------------------------------------------------|----------------------|----------------------------------------------------------|------------------------------------------------------------|---------------------------------|
| Written Comments | | | | |
| Individual Letters | 5 | 3 | | |
| Group/Organization Letters | 1 | 4 | 2 | |
| Form Letters | | | | |
| Hearings | | | | |
| MA | | | | x |
| RI | | x | 3 | |
| CT | | | | |
| NY | x | | | |
| NJ | | x | 7 | |
| DE | | x | x | |
| MD | | x | x | |
| VA | | 2 | 2 | |

Other Comments:

Instead of putting the burden on the Commercial Fisherman to tag fish, do not allow recreational fishermen to land live tautog. They could keep them live for culling purposes while fishing but must kill all fish to be harvested before reaching the marina

RECEIVED

JUN 19 2017

ASMFC



State of Connecticut
HOUSE OF REPRESENTATIVES
STATE CAPITOL
HARTFORD, CONNECTICUT 06106-1591

REPRESENTATIVE CHRISTINE CONLEY
40TH ASSEMBLY DISTRICT

LEGISLATIVE OFFICE BUILDING, ROOM 4009
CAPITOL: (860) 240-8585
TOLL FREE: (800) 842-8267
FAX: (860) 240-0206
E-MAIL: Christine.Conley@cga.ct.gov

June 15, 2017

Ashton Harp
Fishery Management Plan Coordinator
1050 North Highland St, Suite 200 A-N
Arlington, VA 22201

VICE CHAIR
PLANNING AND DEVELOPMENT COMMITTEE

MEMBER
JUDICIARY COMMITTEE
TRANSPORTATION COMMITTEE

Re: Tautog Amendment

Dear Mr. Ashton:

I write to ask that the Tautog Amendment 1 be more lenient than the current proposal. As the state representative from Groton, I represent party and charter boat owners whose livelihoods depend on the catch, and such a severe restriction of the Tautog catch, along with the current restrictions on fluke, seabass and striped bass, will hinder their ability to make a living.

I would like to suggest that ASMFC explore other options/suggestions to distinct charter and party boats as distinct from private boats in the amendment.

The captains of the Party and Charter Boats have offered the following suggestions which I urge you to consider. They have a stake in the continued health of the tautog fishery. They propose the following changes to the current management measures for charter and party boats in the LIS region:

1. Eliminate the spring (April 1 – April 30) and summer (July 1 – August 31) open seasons in Connecticut;
2. Shorten the open fall season to October 12 – December 1 for Connecticut and New York; and
3. Impose a possession limit of 4 fish and a slot limit of fish from 16" to 22" to protect large egg-bearing females.

Thank you very much for your consideration in this matter.

Sincerely,

A handwritten signature in blue ink, appearing to read "Christine Conley".

Christine Conley
State Representative



ANDREW P. RAIA
Assemblyman 12th District

RECEIVED

JUL 24 2017

ASMFC

THE ASSEMBLY
STATE OF NEW YORK
ALBANY

MINORITY WHIP
RANKING MINORITY MEMBER
Committee on Health
COMMITTEES
Banks
Environmental Conservation
Housing
Rules
MINORITY REPRESENTATIVE
Legislative Council on
Health Care Financing

Ms. Ashton Harp
ASMFC Fisheries Management Plan Coordinator
1050 N Highland Street
Arlington, VA 22201

July 16, 2017

Dear Ms. Harp:

I am writing you in regards to the Atlantic State Marine Fisheries Commissions Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog. Specifically, I am echoing the concerns of one of my constituents, Mr. Robert Berry, the owner of Hi-Hook Bait and Tackle Shop in Huntington, New York, regarding the significant economic impacts this proposal will have on the fishermen and tackle shop owners operating in direct proximity to the Long Island Sound.

Representing a legislative district that incorporates a large swath of this body of water, I understand the importance of maintaining a healthy, stable and sustainable ecosystem. As you know, the Long Island Sound has been used as a fishing ground for hundreds of years, providing residents with economic opportunities as well as fresh seafood. Based upon the 2015 Benchmark Stock Assessment and Peer Review Report, it has been determined that tautog have been overfished at alarming levels all along the mid-Atlantic seaboard. However, based upon the firsthand accounts of fishermen living in my district, they believe that the stocks of blackfish are much higher than the numbers in the study suggest.

Already experiencing burdensome levels of taxation and having to endure external factors beyond their control such as high fuel prices, bad weather and slow economic growth, adding additional regulations will most likely amplify the negative financial costs inflicted on Long Island's fishermen. As a result, I fear that individuals associated with the fishing, charter and party boat industries will be unfairly impacted by these proposed measures. Many individuals residing in my district have relied on the resources of the sea in order to make a living and provide for their families, and it is my hope that their concerns and experiences be taken into account before enacting any new regulations that will have a direct impact on them.

PLEASE REPLY TO: Room 635, Legislative Office Building, Albany, New York 12248 • 518-455-5952, FAX: 518-455-5804
 75 Woodbine Avenue, Northport, New York 11768 • 631-261-4151, FAX: 631-261-2992
EMAIL: RA1AA@nyassembly.gov

Again, thank you for your attention regarding this matter, and if you require any further information from me please do not hesitate to contact my office directly.

Sincerely,

A handwritten signature in black ink that reads "Andrew P. Raia". The signature is written in a cursive style with a prominent flourish at the end of the name.

Andrew P. Raia
Member of Assembly
12th A.D.

Toni Kerns

From: Barbara Evans <fishgrizzly@aol.com>
Sent: Friday, July 14, 2017 4:53 PM
To: Ashton Harp
Subject: Tautog Draft Amendment 1

Hi Ashton. Carey Evans of the Charter boat Grizzly also Delaware's Recreational representative.

After a discussion with many other charter and head boat operators in the industry we would be in favor of option A.

Our biggest concern with all of the other options is losing the 11 days we have available to fish for tog in May. If another option would give us the flexibility to fish for tog those first 11 days we could live with the other changes. Losing the 11 days would be very hard on the industry as we would have to shift that fishing pressure to blackdrum which at this point is still light.

An extension of days till May 15 would be very beneficial to our industry in the state as well. May 15 seabass opens. Perhaps that could be accomplished thru losing some of the days in July from one of the other options. Taking the days from July and adding them to May also will lessen the enforcement burden as the shorebased fisherman are more burdensome for the enforcement agents.

Thank you for your consideration
Carey Evans
Owner/Operator Grizzly Sportfishing
302 245-9776

PO Box 816
Fairhaven, MA 02719
June 6, 2017

Deputy Director Dan McKiernan
Division of Marine Fisheries
251 Causeway Street
Boston, MA 02114

Dear Dan:

I read the study on tautog tagging conducted by NYSDEC. The investigators said that they spoke to fishermen about the way they handle the fish from catch to market when formulating the study. They held 21 tautog in a cage 3'x5'x30". Then tagged the fish and held 7 in a 6' diameter tank 20" deep. Most of the fish were less than 16 inches. This does not duplicate the way fish are handled here in Massachusetts.

Most fishermen hold their tautog in a mesh bag over the side of the boat. Some have a live well in the boat. The mesh bag that I use has a 12" diameter hoop on top with 3 feet of 2 inch mesh netting. I usually put 10 fish in a bag, because I have difficulty lifting more than 10 fish at a time. Some fishermen put as many as 20 fish in a bag (they may use bigger bags),

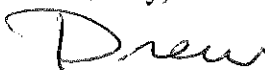
The most convenient time to tag is when the fish is caught and is lying on the deck. The fish would then be put in a mesh bag and placed over the side. As the fish are added they are rubbing gill to gill next to each other and when the tide is running they are forced to the bottom of the bag. The fish are kept in the bag and placed on deck or in a cooler when moving to a new fishing location or steaming into port. If it is a long steam the fisherman may stop every 20 minutes and dip the fish.

Some fishermen use live wells. These vary in size but typically are 3'x2' by 2' deep. The live wells provide more room but by the 40th fish the tautog are in close contact and rubbing against each other.

My concern is that these tags will not stay on the fish because of all the abrasion they are subjected to. In the study, they lost one tag even though the fish were in relatively spacious tanks. I think there will be tag loss in the fishermen's holding nets and live wells and also in the dealer's tanks.

Before requiring use of tags on live tautog, it would be beneficial if *Marine Fisheries* conducted their own study with the fish held in a more confined environment.

Sincerely,



Drew Kolek

From: Michael Pierdinock [mailto:cpfcharters@yahoo.com]
Sent: Thursday, June 22, 2017 1:13 PM
To: Ashton Harp <aharp@asmfc.org>
Cc: Dan Mckiernan@state.ma.us <dan.mckiernan@state.ma.us>
Subject: Comments to Draft Amendment 1 to the IFMP For Tautog

Dear Ashton:

The Massachusetts recreational and for-hire fleet is presently subject to black sea bass closures the end of August and fluke closures the middle of September that is not the case in Rhode Island where they are able to land black sea bass into the fall. This has resulted in anglers booking trips in Rhode Island and subsequent loss of business by the Massachusetts for-hire fleet.

The regional management approach may be a step in the right direction to create a level playing field as well as assist in enforcement but recent history of such an approach is concerning. The benefit of regional management is consistent bag limits in each state or region that assist in enforcement. Regional management also assists in the ability to buffer some of MRIP deficiencies at smaller regional scale (state by state) and it allows some consistencies between shared waters.

There can be significant variations in a particular fishery even on small geographic scales of 30 miles or less. We see those variations and the inability to set adequate measures to accommodate those variations in many regional fisheries such as black sea bass and fluke noted above. The historical progression observed once a regional approach is adopted is that states within that region will soon find that regional management does not provide a fair or reasonable opportunity to set regulations in their state to maximize their fishery. Such examples are evident with fluke in DE, NJ, NY and CT. Regional management can eliminate entire groups of fishermen either due to timing of start/end dates or from minimum size limits that do not fit the length frequency available to anglers in a particular part of a state.

The regional management recreational measures set forth in Table 16 of the Draft Amendment 1 to the IFMP For Tautog For Public Comment document does not provide measures that take into consideration the closures set forth above and typical times of the year that tautog are found in the Buzzards Bay and Vineyard Sound waters. As set forth above, this could be one of the flaws in a regional approach that the timing that tautog arrive in our waters may not be consistent with Rhode Island waters.

The recommended proposed recreational measures are as follows:

- 6 fish limit September through December plus April and May; and
- 1 fish limit the rest of the year.

The 6 fish limit September through December provides an opportunity to land tautog when black sea bass and fluke season is closed in Massachusetts waters. The April and May timeline provides an opportunity to land tautog when black sea bass and fluke are typically not present on our waters.

If you have any questions please email or give me a call. Please confirm receipt of this email.

Thanks

Capt. Mike Pierdinock

CPF Charters "Perseverance" - New Bedford

Recreational Fishing Alliance - Massachusetts Chairman

Stellwagen Bank Charter Boat Association - Board of Directors

Massachusetts Marine Fisheries Advisory Commission - Vice Chairman

ICCAT Advisory Committee

NMFS - Atlantic Highly Migratory Species Advisory Panel

New England Fishery Management Council - Recreational Advisory Panel

(617) 291-8914

Depart from New Bedford, MA and enjoy your day of fishing aboard the "Perseverance" on a fully equipped Pursuit 3000 Offshore with a Marlin Tower and Outriggers. Go to www.cpfcharters.com for details.

From: Michael Barnett [<mailto:mbarnett@optonline.net>]

Sent: Thursday, May 25, 2017 9:06 PM

To: Ashton Harp <aharp@asmfc.org>

Cc: Attic88@aol.com; wsthatcher@verizon.net; Danielson, Bob (DOT) <bdanielson@dot.state.ny.us>; captpete43@optonline.net; csqueri@aol.com; GREG OCEAN EAGLE <capteagle@optonline.net>; gilmore robert <jigthis171@yahoo.com>; jhutchinson@joinrfa.org; JOHN MIHALE <hugapuck@optonline.net>; JOSEPH PARADISO <captjoe19@optonline.net>; Stuart Newman <SNewman@salonmarrow.com>; reedriemer1@aol.com; robert sullivan <rsulli11@optonline.net>; Robert Andresen <pooka1972@gmail.com>; STEVE KEARNEY <steve81867@hotmail.com>; Steve Witthuhn <ssofabed@aol.com>; Tom Schlichter <outdoortom@optonline.net>; MTWBIGFISH@VERIZON.NET; Twoneefsh@aol.com; GENE TRIPODO <genetripodo@aol.com>; Tarpon200@optonline.net; notimecharters@hotmail.com

Subject: Tautog commercial tagging program

Sir,

I've been made aware of the newly created tautog tagging program that was thought up by someone who obviously doesn't fish for Tautog for a living. The research, I've learned has been done on almost all juvenile fish under our commercial limit of 15". The tagging was done in the confines of a laboratory in Long Island. I beckon you to please accompany a commercial boat during our season in mostly harsh weather and try to attach a tag to a tog's gill plate (of all places) without injuring the fishes breathing apparatus (gills). As you well know a juvenile , or fish under 15" can possibly absorb the punishment it would take having a tag attached to it's gill plate, but a larger fish won't. As a hook, and line commercial fisherman we take a lot of precautions to keep the tautog in the best condition possible for live sale (slow retrieve reels, venting procedures) . I don't think that this tagging program you have come up with is going to work. Any damage done to a togs gills will ultimately kill the fish. Please rethink this for the sake of the people that feed their families with the help of commercial Tautog fishing.

Thankyou
Capt Mike Barnett
F/V CODFATHER

From: fisherman01@comcast.net [mailto:fisherman01@comcast.net]
Sent: Thursday, March 23, 2017 2:21 PM
To: Ashton Harp <aharp@asmfc.org>
Subject: Re: tog meeting

Hi Ashton

Barnegat Light inlet is a phenomenal tog fishery. Last year from mid Sept till early Dec I caught over 2000 tog. For most of the season (ie sept till mid Nov) the tog are spread out the length of the jetty (Approx 1 mile) and back along the bulk head also approximately 1 mile. Sometime during mid Nov the tog begin to migrate toward the last 1/3 of the jetty. My records indicate the migration is influenced by the water temperature and day length. The tog typically stage there until the water temperature stays at 45 or below for several days. At this point the tog head offshore.

The "winter season" for NJ is when the regulation go from 1/ day to 6/day usually Nov 16th. Unfortunately this increase to 6 usually happens when the fish are migrating to the end of the jetty. So naturally most of the fisherman also migrate to the end of the jetty. The number a fisherman also increases at this time due to the increase 6 limit. So there are more fish concentrated in a smaller area and more fisherman. The perfect recipe for over harvesting. One quick anecdote. One year I caught 24 legal size tog Nov 16 and 18 legal tog the next.

I should note I didn't keep even my limit. I just love catching them.

Concerning the poaching issue, I unfortunately have not kept records similar to my catch records. I do know the poaching has decreased thanks to efforts by the NJ Conservation officers and other fisherman. My impression is that land poaching surpasses the illegal takings by boat. This is based on the amount of observe land poaching and the few number of boat fisherman targeting tog. I know not very scientific.

I look forward to providing any additional information and to the next meeting.

Pat

From: "Ashton Harp" <aharp@asmfc.org>
To: fisherman01@comcast.net
Sent: Wednesday, March 22, 2017 3:40:54 PM
Subject: RE: tog meeting

Hi Pat,

Thanks for joining the call and for the feedback. I really appreciate on-the-ground accounts of fishing effort.

Can you explain what you mean in this sentence: "During the "winter season" when the regulations go to 6 per day, the last third of the jetty concentrates the tog." Does this mean more people fish at the end of the jetty in the winter?

There have been discussions regarding different regulations for sound/bay versus the ocean, however I should note that enforcement officers do not prefer multiple regulations for one species in a state. Do you perceive the majority of poaching to happen by vessels or shore based anglers?

Ashton

Ashton Harp

Fishery Management Plan Coordinator
Atlantic States Marine Fisheries Commission
www.asmfc.org

(703) 842-0740
aharp@asmfc.org

From: fisherman01@comcast.net [<mailto:fisherman01@comcast.net>]

Sent: Thursday, March 16, 2017 5:26 PM

To: Ashton Harp <aharp@asmfc.org>

Subject: tog meeting

Hi Ms Harp

Thanks for the opportunity to observe the tautog meeting today. I was encouraged by the efforts to reduce the commercial harvest during prime spawning months.

I fish Barnegat Light jetty for tog almost everyday from the beginning of September till the water cools and the tog head offshore. For me catching is the primary reason for fishing not keeping. Following are some observations and ideas from my many hours on the jetty.

Poaching continues to be a major problem. The last 5 years the NJ Conservation officers have reduced the amount of poaching, but it continues to be a significant problem. Recently the fine was increased. Hopefully a corresponding reductions in poaching occurs.

During the "winter season" when the regulations go to 6 per day, the last third of the jetty concentrates the tog. Why not have lower limits for land based anglers during this time of the year?

An alternative to the above would be to set different regulations for the bay verses the ocean. Similar to the NJ regulation for stripers that is different foe bay and ocean.

I tries to keep this brief, but would gladly give more details.

Pat White

From: PATRICK WHITE [mailto:fisherman01@comcast.net]
Sent: Thursday, July 06, 2017 1:35 PM
To: Ashton Harp <aharp@asmfc.org>
Subject: Tautog Draft Amendment

Hi Ashton

Before providing my comments about the Tautog Draft Amendment, I would like to describe the April tog fishery at Barnegat Light. An understanding of the fishery will help explain my responses to the various section of the draft.

In April, the tog begin migrating inshore when the ocean temperature reaches 45 degrees. This usually occurs around mid-April but as late as the beginning of May. Most years the last seven to ten days of April provide excellent tog fishing. Some years the tog arrive after the season is closed.

In the last letter I described how the tog are concentrated at the last section of the jetty for the November 16th season. During the spring migration the tog are concentrated at the base of the jetty by the lighthouse, due to the warmer bay water. The majority of the early arriving fish are of keeper size. I do not keep females but was still able to limit out most days in one hour. Only one fish which I kept during the April season was under 16 inches. The important factor is that during both seasons with higher limits the tog are concentrated in a relatively small area. This makes it easier to catch a limit and over fish them. Generally from July 17th to Nov 15 when the limit is 1, the tog are scattered throughout a larger area. Thus producing less opportunity to over fish them.

I realize my observations represent a specific tog fishery; however, I feel they are replicated throughout the New Jersey shore based fishery.

The following are comments about the specific sections of the amendment.

1.5.2 and 1.5.2.2

I am confused by this section. Poaching is the primary deterrent to recovering the biomass. In the "commercial fishing" section, the reports describe the "black market for undersize, out-of-season or illegal quantities of tautog." A major problem is the recreational anglers that keeps shorts and illegal quantities. Some are probably sold, so are these recreational anglers considered to be commercial fisherman? I repeat poaching is the biggest obstacle to rebuilding the stock.

2.3

Option G must be added to the 1996MFP. The conservation officers have made increased efforts to control poaching and the state increased the fine to \$100; but poaching continues to be a major obstacle for rebuilding the stock.

4.1 I vigorously support option B.

4.2.4.1

Table 26 - April 1-18 would virtually eliminate the early Barnegat Light tog fishery.

Table 27

B2

Changing the minimum size to 16 inches will only increase the amount of "short" fish harvested. I observed this with fluke. When the size was increased to 18 inches, I saw more undersized fish kept. Keeping the season open until May 31st would produce a slaughter in Barnegat Inlet. During May, the jetty is loaded with the big breeders.

Allowing 6 beginning Aug 31 would greatly increase the total tog catch. *B2 would be a complete disaster for rebuilding the tog biomass at Barnegat Light.*

C1

Ending at March 31st would completely eliminate the shore angler. I don't have a problem with a slot, but how would the party boat patrons react to it? Possibly adding one over 18 inches would help.

I agree with the analysis of over fished and over fishing. Although my number of fish caught and keepers have increased the last four years, the number of larger fish (over 19 inches) has decreased. I would like to offer some alternatives to achieve the goals of the report.

In my previous letter I presented the idea of different regulations for land based versus boat anglers or ocean versus bay anglers. I have discussed this with my local conservation officers. They currently enforce different regulations for striped bass in ocean and bay. They didn't foresee an problems doing the same with tog.

Since the jetty concentrates the fish during the April and November 16th seasons, I am proposing a decrease in shore based bay limits. April 1-30th shore based (or bay) 2 or 3 fish/day and reduce the boat to 3. For November 16th to December 31st, reduce shore based to three and reduce boats to four or five. July 17th to November 15th would remain at one. This maintain the basic seasons that fisherman are familiar with but reduce catch by lowering possession limits. I have several others ways of achieving the goal if you are interested.

In the future I would recommend adding the effects of spear fishing on tog. Tog are one of the easiest fish to spear. Many are killed and then measured. The dead undersized fish are just dumped. As the number of larger tog have decreased, the number of divers has increased. Although this is anecdotal, it is worth examining the effect of

spearing on tog populations. Many divers have trouble judging a 15" fish. How would react with a slot of 15-18"?

I tried to keep this as brief as possible, but would be willing to provide additional information about any of my comments.

Patrick White

Ps I should have started with how impressed I was by the Draft Amendment!!!!

July 11, 2017

Dear Ms. Harp,

I have been involved full time in the commercial fishing industry (hook and line) and the charter/headboat industry since 1990 in NYS, mainly in Peconic Bays, Gardiners Bay, LI Sound, BI Sound, and nearshore Atlantic Ocean—out to 30 nautical miles. I'd like to comment on the proposed blackfish regulations. If any of these proposals pass, commercial fishermen like myself will have their seven-month season cut by one and a half to two months. This will result in an approximate loss of income of roughly 20 percent. Would you like your salary to be cut by 20 percent? The 60 percent reduction in the recreational sector and 50 percent reduction in the commercial sector in 1993 was devastating. Those reductions were based on bad science and no study data. We cannot repeat that process.

There are more blackfish than ever, just as full-time fishermen have told you. I can easily catch my daily limit of 25 legal fish, as well as an additional 50 to 75 undersized fish that are released with zero mortality. I can fish in a different area each day of the week, five to seven miles apart, with one line in the water and one hook. Long Island Sound is not overfished, and it is impossible to overfish blackfish in a two-month window. Preservation of the commercial fishing industry in NYS should be of the utmost priority. If any reductions get passed without new study data, such as full-time fishermen's data (VTR), we will have no choice but to file suit. Commercial landings in NYS have remained constant over many years—the VTRs prove it.

The proposed reductions are based on bad data. The trawl studies are a joke because even full-time commercial draggers have a hard time catching blackfish among the rocks. The fish pot studies are a joke as well, because the woman (Sandra Doumas) conducting the study out of Mattituck and other parts of LI Sound was way off with her timing and location of gear. So both of these studies do not result in accurate data collection. As I said, real data can be obtained from those on the front lines—full-time fishermen.

Where is the commercial quota credit from the elimination in 2016 of the NYS landing license? Shouldn't the commercial sector get that quota? This is mainly a mid-December through February fishery. The recreational season is closed during those months. Again, where is that quota?

The proposed blackfish tagging regulations would accomplish nothing other than creating more work and headaches for the commercial fisherman. At the meeting on June 20, the DEC by their own admission stated that the problem is with the undersized live market, *not* with legal fish. At the meeting I attended, everyone was in agreement for no changes to the commercial or recreational sector.

Regarding notice of the meeting on June 20, 2017, why was there only one e-mail notification? Usually any public meetings are announced via postcard, because many commercial fishermen do not use e-mail. This negatively affected attendance at said meeting. Was this intentional?

Thank you for your consideration on this very serious matter.

Respectfully,

Captain Rob Spitzenberg
100 Ton USCG Masters License
NMFS Commercial Vessel Operator Permit
516.770.4375 (mobile)
captrfs@aol.com

From: Barry Temkin [mailto:barry.temkin@gmail.com]
Sent: Friday, June 30, 2017 2:45 PM
To: Robert Beal <Rbeal@asmfc.org>
Cc: Ashton Harp <aharp@asmfc.org>
Subject: Draft Amendment 1

Dear Mssrs. Beal and Harp:

I commend the Atlantic States Marine Fisheries Commission on its important work of protecting America's natural resources and fisheries. I am writing to lend my support to the ASMFC's proposed Draft Amendment 1, due to my concerns, and the concerns of my friends and family, about commercial overfishing of the Long Island Sound blackfish fisheries. I support and endorse the plan to limit the blackfish harvest for Long Island Sound fisheries.

I am a recreational fisher. I learned to fish with my late grandfather, and I have passed on to my young daughters a love of fishing. I am pleased to report that my daughters have surpassed me in fishing prowess. I can think of no better way to enjoy the beauty and bounty of nature. I support the good work of the ASMFC, and I urge you to restrict the overfishing by commercial fisheries so that my children will someday have the opportunity to pass on the love of fishing to the next generation.

Sincerely,
Barry Temkin
463 West Street
New York, NY 10014
barry.temkin@gmail.com

From: Ilya Elkin [mailto:pennh2o@hotmail.com]

Sent: Thursday, June 29, 2017 10:47 AM

To: Ashton Harp <aharp@asmfc.org>

Subject: Tautog draft amendment

Hello Ashton, my name is Ilya Elkin and I am a commercial rod and reel fisherman from Brooklyn, NY. First thing I would like to do is apologize for the verbal beating you had to endure during the tautog DEC meeting last Tuesday. I definitely understand and agree with many of the things that were said during the meeting however it wasn't right how the message was delivered. I'd like to give my opinion on the new tautog regulations. I and almost all of the commercial guys I've spoken to are in favor of the NY Bight and NY Sound being divided into 2 separate regions. We do not want to take the NY Sound's harvest cut. As far as size and season, all of us are in favor of leaving it the way it is which is option A1: 15 inches, 25 fish, Jan 1-Feb 28 and April 14-Dec 31.

As far as the tags go, all the commercial guys I spoke to are strongly against the tags. A dead and bleed policy for the recreational guys is the way to go. Will save a ton of money and time as far as administrative costs go and will decrease poaching.

Please take our input very seriously. The tautog is by far the most important fish for rod and reel guys to make a living. Please choose option A1.

Thank you for your time.

Please respond to this email so I know you've read it

RECEIVED

06/27/2017

JUN 30 2017

ASHTON HARR

1050 NORTH HIGHLAND ~~AS~~SMFC

SUITE 200 A-N

ARLINGTON VA 22201

TAVI06 DRAFT
AMENDMENT 1

DEAR ASHTON

ATTACHED ARE COPIES OF MY LETTERS TO YOU OF
09/23/2015 AND 06/20/2015

SINCE I COULD NOT DISCUSS ALL OF THE ISSUES LISTED
IN MY LETTER TO YOU OF 06/20/2017 AT LAST TUESDAY'S
MEETING I AM FOLLOWING UP ON THOSE ISSUES AS WELL
AS SEVERAL ADDITIONAL COMMENTS OBSERVATIONS AND
SUGGESTIONS.

1- MANAGEMENT GOALS - PAGE 47 OF DRAFT AMENDMENT
THE MANAGEMENT GOAL IS TO "CONSERVE THE RESOURCE"
AND "MAINTAIN THE SOCIAL AND ECONOMIC BENEFITS OF
RECREATIONAL AND COMMERCIAL UTILIZATION". THE STATEMENT
SPEAKS FOR ITSELF.

2- ARTIFICIAL REEF DEVELOPMENT - PAGE 45 OF DRAFT
SINCE ARTIFICIAL REEFS "CAN ENHANCE FISH HABITAT" AND

ALSO " INCREASE TOTAL BIOMASS IN A GIVEN AREA"
THE ASMFC AND THE STATES HAVE TO WORK TOGETHER
TO FIND SPONSORS WHO WOULD HELP FINANCE ARTIFICIAL
REEF DEVELOPMENT.

3 - LOSS OF HABITAT DISSOLVED OXYGEN LEVELS
MOVEMENT OF TATOG - PAGES 33 & 34 OF DRAFT
IT IS PRETTY SIMPLE - IF YOUR HOME IS DESTROYED
BEYOND REPAIR - YOU MOVE - IF YOU CANNOT BREATHE -
YOU MOVE - IF THE WATER GETS TOO WARM -
YOU MOVE. I BELIEVE THAT THE TATOG HAVE MOVED
TO THE BRIDGES NEAR OUR SOUTH SHORE INLETS
WHERE WE HAVE GOOD TIDAL FLOWS AND COOLER WATER
I WOULD ALSO MENTION THAT THERE IS AN ONGOING
EFFORT TO ENHANCE THE STRUCTURAL SUPPORTS OF
OUR SOUTH SHORE BRIDGES WITH ROCK AND THIS HAS
INCREASED THE TATOG POPULATION AROUND THESE BRIDGES.

4 - TATOG FISHERY SURVEYS OBSERVATION OF
COMMERCIAL TRIPS TAGGING PROGRAMS
PAGES 61 62 63 64 OF DRAFT AMENDMENT

THERE ARE SEVERAL AREAS OF CONCERN THAT
IMMEDIATELY STAND OUT TO ME:

A - NO LONG ISLAND SOUTH SHORE OCEAN SURVEYS
OTHER THAN JAMAICA BAY - NO LONG ISLAND SOUTH SHORE
BAY SURVEYS

B - OTHER THAN MA & MI - STATE OBSERVED COMMERCIAL TRIPS AVERAGES LESS THAN 5 PER YEAR OVER A 24 YEAR PERIOD. NEW YORK OBSERVED ONLY 59 COMMERCIAL TRIPS THAT CAUGHT TAVTOG IN THE SAME 24 YEAR PERIOD.

C - THERE IS NO INDICATION IN THE DRAFT OF ANY OBSERVATIONS MADE OF COMMERCIAL ROD & REEL TAVTOG TRIPS. NEW JERSEY HAS MONITORED RECREATIONAL PARTY/CHARTER BOAT AND COMMERCIAL FISHERIES. HONESTLY THE NUMBERS RESPECTFULLY DO NOT MAKE SENSE. 4000 TAVTOG %, 200 TRIPS = 20 FISH PER TRIP. REMEMBER ~~THIS~~ THIS IS THE TOTAL # OF FISH INCLUDING DISCARDS (SHORTS).

WHEN YOU INCLUDE THE RECREATIONAL FISHERY, (90% OF TOTAL TAVTOG LANDINGS) ROD & REEL FISHING ACCOUNTS FOR THE OVERWHELMING MAJORITY OF TAVTOG LANDINGS. WE NEED TO GREATLY INCREASE OUR STUDIES OF BOTH THE RECREATIONAL AND COMMERCIAL ROD & REEL TAVTOG FISHERY.

5 - ILLEGAL COMMERCIAL FISHERY - PAGE 36 OF DRAFT

THE ONLY LOGICAL DETERENT TO THE ILLEGAL COMMERCIAL TAVTOG FISHERY (MOSTLY BY UNLICENSED FISHERMEN) IS THE SEVERITY OF THE PENALTY.

WE NEED TO REDEFINE THE THRESHOLD AT WHICH THE FINE BECOMES 50-100 TIMES THE VALUE OF THE ILLEGAL HARVEST.

6 - TAGGING TRIAL

FIRSTLY SANDRA DUMAIS, JOHN MANISCALCO AND THE REST OF THE TEAM DID A GREAT JOB IN CONVEYING IN A VERY TRANSPARENT WAY - EXACTLY WHAT THEY DID.

HOWEVER I POLITELY AND RESPECTFULLY WISH TO POINT OUT THE PROBLEMS I HAVE WITH BOTH THE STUDY AND TAGGING OF TAUTOG.

A - PAGE 2 OF COMMERCIAL TAGGING TRIAL
TWENTY ONE TAUTOG WERE COLLECTED ON 09/23/2016 AND 09/26/2016. THEY WERE PLACED IN A LIVE CANT OFF A DOCK IN MATTITUCK CREEK FOR 2-5 DAYS. ON 09/28/2016 THEY WERE TRANSPORTED TO FLAY POND MARINE LABORATORY WHILE MONITORING THE TEMPERATURE SALINITY AND DISSOLVED OXYGEN OF THE WATER SO - THEY CAUGHT THE FISH - HELD THEM FOR 2-5 DAYS IN A LIVE CANT - THEN TRANSPORTED THEM TO FLAY POND IN AN EXTREMELY CONTROLLED ENVIRONMENT AND TAGGED THEM IN THE LABORATORY.
THIS IS NOT THE REAL WORLD.

B - SECOND PROBLEM IS THE SIZE OF THE FISH
SAMPLED AND THE FACT THAT THEY WERE ALL CAUGHT
ONLY IN FISH POTS AND NONE BY NOD AND REEL

$$\underline{381 \text{ MM} \times .03937 = 14.99997''}$$

11 OF THE 21 FISH WERE LESS THAN 15 INCHES
7 OF THE 15 FISH TAGGED WERE LESS THAN 15 INCHES

THE LARGEST FISH WAS 432 MM X .03937 17.00784''
AND WEIGHED 3.201 POUNDS

THIS IS NOT THE REAL WORLD

C - IT IS EXTREMELY UNLIKELY THAT WE WILL BE
ABLE TO PLACE THE APPLICATION INTO THE GILL OF A
FRESH CAUGHT TAUTOG ON A ROCKING BOAT WHILE WE
ARE FISHING AND NOT DAMAGE THE FISH. I CAN
IMAGINE DAMAGING THE GILLS WHILE TRYING TO HOLD
THE LIVE FISH AND SECURE THE TAG.

TAGGING OF LIVE BLACKFISH WILL NOT WORK IN THE
REAL WORLD.

SOME FINAL THOUGHTS - EVERYTHING IN MY LETTER
TO YOU OF 09/23/2015 IS STILL RELEVANT. KINDLY
ME-SUBMIT ALL OF THE ENCLOSED DOCUMENTS FOR
CONSIDERATION

MY SON MICHAEL MADE AN INTERESTING AND ASTUTE

OBSERVATION AT LAST TUESDAY ASMFL MEETING.
HE SAID THAT WHEN YOU CATCH ONLY SHOW BLACKFISH
YOU MOVE TO FIND BIGGER FISH. THUS THE DISCARDS
ON THE VTAS DO NOT ACCURATELY REFLECT THE
NUMBER OF SUB-LEGAL FISH IN THE POPULATION.

FINALLY DEL LAW ENFORCEMENT MENTIONED THE
FOLLOWING AT LAST TUESDAY'S MEETING

- 1- NEW YORK HAS ELIMINATED THE BLACKFISH (TAVT06)
LOOHHOLE IN OUR LANDING LICENSE. THE LANDING
LICENSE CAN NO LONGER BE USED TO LAND TAVT06
IN NEW YORK
- 2- FINES ARE TOO LOW FOR BLACKFISH VIOLATIONS.
- 3- BEST SOLUTION IS NO RECREATIONAL LIVE
BLACKFISH. THIS WAS THE ORIGINAL INTENT OF
NEW YORK'S COMMERCIAL DECAL.
- 4- DIFFICULT TO ENFORCE DIFFERENT RULES FOR
LI SOUND REGION

MY RECOMMENDATION IS OPTION A STATUS QVO
NO CHANGE TO EXISTING REGULATIONS

THANK YOU



John G. Mihale
153 California Place North
Island Park, NY 11558

RECEIVED

06/20/2017

JUN 30 2017

ASHTON HARP
1050 NORTH HIGHLAND ST ASMFC
SUITE 200 A-N
ARLINGTON, VA 22201

TAUTOG DRAFT
AMENDMENT 1

My RECOMMENDATION IS OPTION A STATUS QUO.
MAINTAIN THE 1996 GOALS. I HAVE ENCLOSED A
COPY OF MY LETTER TO ASHTON HARP OF 09/23/2015
IN SUPPORT OF MY RECOMMENDATION. WE NEED TO BE
PATIENT AND ALLOW THE CHANGES TO THE TAUTOG MANAGEMENT
PLAN THAT BECAME EFFECTIVE JAN 1, 2012 SUFFICIENT
TIME TO ACHIEVE THEIR DESIRED RESULTS.

AT TODAY'S MEETING I WOULD LIKE TO DISCUSS THE FOLLOWING
ISSUES RAISED IN DRAFT AMENDMENT 1

- 1 - MANAGEMENT GOALS - PAGE 47 ATTACHED
- 2 - ARTIFICIAL REEF DEVELOPMENT - PAGE 45 ATTACHED
- 3 - LOSS OF HABITAT DISSOLVED OXYGEN LEVELS
MOVEMENT OF TAUTOG PAGES 33 & 34 ATTACHED

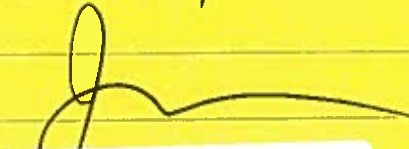
4 - TAVTOG FISHERY SURVEYS OBSERVATION OF
COMMERCIAL TRIPS TAGGING PROGRAMS
PAGES 61 62 63 64 ATTACHED.

5 - ILLEGAL COMMERCIAL FISHERY PAGE 36 ATTACHED

6 - TAGGING TRIAL

MY RECOMMENDATION IS OPTION A STATUS QVO
MAINTAIN THE 1996 GOALS.

THANK YOU



John G. Mihale
153 California Place North
Island Park, NY 11558

RECEIVED

JUN 30 2017

09/23/2015

ASHTON HAMP
ASMFC

ASMFC

1050 NORTH HIGHLAND ST.
SUITE 200 A-N
ARLINGTON VA 22201

TAUTOG PID

My RECOMMENDATION IS OPTION 1 STATUS QUO

THE FOLLOWING INFORMATION FROM THE ORIGINAL TAUTOG MANAGEMENT PLAN OF APRIL 1996 AND THE PID OF AUGUST 2015 EXPLAIN MY RATIONALE FOR THIS RECOMMENDATION.

- 1- THE ORIGINAL MANAGEMENT PLAN FOR TAUTOG OF APRIL 1996 WAS NOT FULLY IMPLEMENTED UNTIL JAN 1, 2012 ALTHOUGH ALL STATES HAD INCREASED THE MINIMUM SIZE LIMIT TO AT LEAST 14" BY 1996, (AS REQUIRED BY THE PLAN) THE IMPLEMENTATION OF THE REQUIRED FISHING MORTALITY TARGET OF $F 0.15$ WAS NOT ACHIEVED UNTIL JAN 1, 2012 IN EFFECT THE FULLY COMPLIANT MANAGEMENT PLAN FOR TAUTOG HAS BEEN IN EFFECT FOR LESS THAN FOUR YEARS.

SOME OF THE FACTS PRESENTED TO US IN THE ORIGINAL TAUTOG MANAGEMENT PLAN OF APRIL 1996 ARE:

- A- FROM PAGE 5 "TAUTOG NORMALLY REACH SEXUAL MATURITY AT 3-4 YEARS OF AGE (7-12") ALTHOUGH THERE ARE SOME SEXUALLY MATURE

2 YEAR OLD FISH.

B - FROM PAGE 6 " IN RHODE ISLAND WATERS THE MEAN LENGTH OF A SEVEN YEAR OLD MALE WAS 14.1 INCHES WHILE A FEMALE WAS 13.2 INCHES"

C - ALSO FROM PAGE 6 " OPTIMUM SIZE FOR FEMALE EGG PRODUCTION HAS BEEN ESTIMATED AS 14-16 INCHES"

D - FROM PAGE 7 TABLE 1 TAVTOG LENGTH AT AGE RELATIONSHIP

| | | | | | |
|---|------|-----|--------|----|-------|
| 4 | YEAR | OLD | TAVTOG | IS | 10.5" |
| 5 | " | " | " | IS | 12.5" |
| 6 | " | " | " | IS | 14" |
| 7 | " | " | " | IS | 15.5" |
| 8 | " | " | " | IS | 17" |

2 - IT IS THEREFORE EXTREMELY UNLIKELY THAT ANY OF THE TAVTOG THAT HAVE COME INTO EXISTENCE SINCE JAN 1, 2012 HAVE COME CLOSE TO THE 15"-16" MINIMUM LEGAL SIZE LIMIT TO BE HARVESTED AND THE OPTIMUM SIZE FOR FEMALE EGG PRODUCTION (SEE C ABOVE).

IT SEEMS LIKELY THAT MOST OF THE TAVTOG THAT HAVE COME INTO EXISTENCE SINCE JANUARY 1, 2012, ARE JUST BEGINNING TO ENTER THE REPRODUCTIVE PHASE OF THEIR LIVES. "TAVTOG NORMALLY REACH SEXUAL MATURITY AT 3-4 YEARS OF AGE 7-12"

THIS SUGGESTS TO ME THAT WE HAVE NOT GIVEN APPENDUM VI SUFFICIENT TIME TO BEGIN TO INCREASE THE STOCK. WE NEED TO BE VIGILANT BUT WE ALSO NEED TO BE PATIENT.

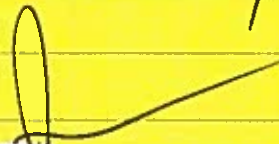
3- EVEN IF THE COMMISSION DECIDES TO PROCEED WITH A REGIONAL APPROACH (WHICH I AM AGAINST) THEY SHOULD DO IT FOR THE RECREATIONAL FISHERY ONLY. IT WILL BE EXTREMELY DIFFICULT TO TRY TO COMBINE THE COMMERCIAL FISHERIES OF STATES WITH DIFFERENT SIZE POSSESSION AND OPEN SEASONS.

E.G. NEW YORKS COMMERCIAL FISHERY HAS A 327 DAY OPEN SEASON AND A MAXIMUM POSSESSION LIMIT OF 25 FISH. THE 25 FISH MAXIMUM POSSESSION LIMIT IS A STATE LAW WHICH CANNOT BE INCREASED BY THE NY STATE DEL

NEW JERSEY HAS AN 88 DAY OPEN SEASON AND SOME OF THE COMMERCIAL FISHERMEN HAVE NO LIMIT ON THE NUMBER OF TAUTOG THEY CAN HARVEST DURING THEIR OPEN SEASONS

AGAIN MY RECOMMENDATION IS OPTION 1 STATUS QUD

RESPECTFULLY



John G. Mihale
153 California Place North
Island Park, NY 11558

-----Original Message-----

From: Jcschoenig [mailto:wtfever@optonline.net]

Sent: Friday, April 28, 2017 10:14 PM

To: Ashton Harp <aharp@asmfc.org>

Subject: Tautog

My name is John S Schoenig and I am the Conservation Chairman for the Imperial Sportsmen and Suffolk Seniors fishing clubs. I actively attend all the meetings of the MRAC held at the DEC in New York.

I have on behalf of the two clubs have trying to get a spring Blackfish season in New York. We have not had one in 6years. At a recent meeting of MRAC they and the DEC agreed to actively support one.

However it had to be approved by the technical committee of the ASMFC and it was not on their agenda for May. The DEC told me that they will ask for it to be put on the September agenda.

In my request for a spring Blackfish season i furthered said that no one should have possession of Blackfish during the spawn, any Blackfish on a recreational boat had to be euthanized and i am in favor of Commercial tagging to stop Recreational sales. I am also in favor of a separate Long Island Sound Region. I would like to know the Demarcation location for the East End.

Also note that the ASMFC considers Blackfish to be a Recreational fish 🐟 however in New York our season is 3 months and Commercial is 11 months (open during the spawn) Thank you for the opportunity to contact you during the public comment period.

-----Original Message-----

From: Rich [mailto:ram1218@yahoo.com]

Sent: Sunday, June 11, 2017 1:34 PM

To: Ashton Harp <aharp@asmfc.org>

Subject: Tautog mgmt.

Sir, instead of punishing recreational fishermen, how about banning pot fishing which fishes all year, 24/7, regardless of weather conditions, feeding patterns, tides etc. The mortality rate for blackfish is off the charts. In addition, here in Montauk, it is a common practice for commercial potters to keep cages or pens hidden in order to sell their catch at times beneficial to them. Rod and reels are not diminishing the stock, large scale potting, especially in the spring in shallow water on the breeding grounds. This is basic common sense! Fishermen are kept at the dock for a variety of reasons, pots always fish. To make matters worse, the pots are on the spots we blackfish, making it difficult to anchor and wiping out the blackfish resident populations!!!! Richard McGuire

Sent from my iPhone

RECEIVED

JUN 21 2017

To - John Gilmore - Director Marine division NYSDEC
ASMFC John Maniscalco - Bureau Chief of marine Fisheries NYSDEC

From - Robert Berry - President
Hi-Hook Bait & Tackle Inc.
Huntington, N.Y. 11743

June 18th, 2017

I am writing to you in response to requests for comments to "Draft ammendment 1 to the Interstate Fishery management Plan for Tautog". Have all of you completely lost your minds, or have you been drinking the "Kool-Aid:

If your objective is to put all Tackle shops, Party Boats, and Charter Boats out of business, then Congratulations, YOU WILL SUCEED.

As a tackle shop owner, and fisherman myself, I couldn't disagree more with draft ammendment 1. You make references to studies, surveys, and graphs (mostly from 1970-1995) that do not tell the FACTS of the current tautog fishery.

I can give you FACTS. Over 90% of blackfish anglers returning to my shop have reported catching and releasing more 7"- 15" blackfish over the past 5 years, than they have seen in their entire lifetime. I can give you PERSONAL EXPERIENCE. I have caught and released more 7"-15" blackfish in the past 5 years than I have seen in my entire lifetime.

The Draft Ammendment states(1.2.1.5) that Tautog reach sexual maturity at 3-4 years of age or approx. 7"-12", while maintaining that there is a drastic reduction in breeding stock. Well my FACTS DRASTICALLY DISAGREE WITH THIS STATEMENT. THERS IS AN ABUNDANCE NOT A REDUCTION.

Also note that your mortality figures are way off base. Tautog are one of the hardiest fish in the water. They take their prey in the pharyngeal teeth prior to swallowing, which results in a 99% lip hook rate. This is proven to be minimally traumatic to the fish. While I will agree that fish caught in more than 50ft. of water are subject to pressure changes that can cause mortality, the majority of tautog caught in deeper water are larger fish that are in the keeper range. Please also note that the majority of tautog fishing areas in Long Island are of depths less than 50ft.

Regarding (1.5.3.1) Recreational Fishery " There are no published or un-published studies as of 2016 that documents the economic impacts or economic value of the recreational Tautog fishery". I can publish one for you. IF YOU IMPLEMENT A 1 BAG FISH LIMIT ON TAUTOG YOU WILL PUT ALL TACKLE SHOPS, PARTY BOATS, AND CHARTER BOATS OUT OF BUSINESS.

We endure inclimate weather, high fuel prices, slow economies, high taxes, and size and bag regulations based on false studies and paper pushing numbers. If you want facts not fiction, survey the tackle shop owners, party boat owners, and charter boat owners. WE CAN GIVE YOU THE TRUE FACTS AND EXPERIENCES RELATED TO TAUTOG AND ALL FISH SPECIES.

While I am all for conservation and saving fish for our future generations, size and bag regulations MUST be decided by real numbers not false science.

JUN 21 2017

ASMFC

AS a taxpayer and business owner of Long Island I DEMAND THAT YOU LEAVE THE EXISTING TAUTOG REGULATIONS IN PLACE . While not ideal, they are bearable to remain in business. I REFUSE TO ALLOW YOU TO TAKE MONEY OUT OF MY POCKET, FOOD OFF OF MY FAMILY'S PLATE, AND FORCE ME OUT OF BUSINESS. A BUSINESS THAT I POUR MY BLOOD SWEAT AND TEARS, AS WELL AS OVER 90 HOURS PER WEEK TO MAINTAIN A LIVING.

Sincerely,



Robert Berry - President
Hi-Hook Bait & Tackle Inc.
631-683-4741

CC: Ashton Harp - FMP Coordinator
Dr Spencer- Suffolk County Legislature
Chad Luppinacci NYS Assembly
Andrew Raia - NYS Assembly
Carl Marcelino - NYS Senate

From: Steven E [mailto:sgenyc@gmail.com]

Sent: Tuesday, June 13, 2017 8:47 PM

To: Ashton Harp <aharp@asmfc.org>

Subject: FMP for blackfish

Att: Mr. Ashton Harp

Mr. Harp:

I am a charter Captain in the Western Long Island Sound and have pulled anchor many times over the last 2 years only to find that I have been caught up in illegal blackfish traps. I have personally boarded a vessel that I witnessed pulling up a trap, obviously not by accident, released the fish, removed the keys from the boats ignition and summoned NYPD Harbor Patrol to the vessel. This crap has to stop now, and although my charter business will suffer the repercussions associated with harvest restrictions, I would welcome new regs in general and serious penalties for illegal trap fishing in particular. If I can be of any assistance to you or the objectives and goals for tog management in my area, I am happy to help.

Steve Ehrlich

(347)539-6163

From: steven foceri [mailto:steven.foceri@yahoo.com]
Sent: Monday, June 12, 2017 11:50 AM
To: Toni Kerns <Tkerns@asmfc.org>
Cc: Ashton Harp <aharp@asmfc.org>
Subject: Re: Blackfish regulation

Thank you for your response.

I was out this weekend and was checked by a DEC boat. However, he never boarded us, nor checked for licenses; they only asked us to hold up the fluke we caught.

I really need to stress the urgency especially in NY metro and Long Island areas that I fish in. I see hundreds of incidents of people fishing from the land and on the water every season. Please help protect the fishery from the poaching that is occurring.

Many of us are complaining about how there needs to be some sort of enforcement as the short fish that are poached are simply filleted by deckhands on the ride back on the party boats in our area. There needs to be some sort of amendment that prevents this, maybe some sort of regulation that prevents mates from filleting the fish while the boat is still out.

There also needs to be some sort of regular checks made in shore spots, on party boats and on the rental skiffs that are out there. Even if resources are limited there needs to be enforcement for these situations as they seem to be a "blind spot" that is being exploited and hastening the destruction of the fishery. Specifically, the boats out of City Island NY are major offenders in my area and really need to be checked on weekends if possible.

Both the patrons and crews of the party boats need to follow the same rules as the rest of us as Anglers. We all fish the same waters, and in seventeen seasons on the Western Sound I have seen countless incidents of poaching on these vessels, where a \$5 tip to a mate is the ticket to taking all the fish you want, regardless of the regulations.

Regulations are meaningless if no one enforcing them. The party boat fleets need to be checked. Please hear us as anglers and thank you for your time.

Very truly,
Steven Foceri.

On Monday, June 12, 2017 11:19 AM, Toni Kerns <Tkerns@asmfc.org> wrote:
Thank you for your comments Mr. Foceri-

In addition to including your comments to the Management Board, I have also shared them with NY DEC and law enforcement. The draft addendum is proposing a commercial tagging program which we hope will help with illegal fishing and the black market for blackfish. I recognize this alone will not stop all illegal fishing. I encourage you to keep informing DEC when you see

illegal fishing occurring, with limited resources and personnel it is difficult for law enforcement to be everywhere, but getting tips for folks on the water help them to direct their efforts.

Thank you

Toni Kerns

From: steven focerì [<mailto:steven.focerì@yahoo.com>]
Sent: Friday, June 9, 2017 2:27 PM
To: Toni Kerns <Tkerns@asmfc.org>
Subject: Blackfish regulation

Hello Mr. Kerns,

If you guys actually enforced the regulations it would make the difference. There are 100's if not 1,000's of people fishing my the NY Metro area without licenses who take EVERY fish they catch. You need some boots on the ground to make a difference. Last season, at Montauk I watched as seven anglers took short striped bass from under the lighthouse. I called the DEC and reported it but no one ever even showed to check out the report after I waited for 3 hours.

Instead of punishing the people who follow the rules and cutting down our regulations PLEASE do something about the illegal fishing that continues to take place right beneath the nose of the DEC particularly checking the catch of the anglers on party boats as there is a disturbing trend for those anglers to keep short fish with no DEC or environmental officers checking on them.

Sincerely
Steven

-----Original Message-----

From: THOMAS BURNS [mailto:tdgb@optonline.net]

Sent: Friday, June 23, 2017 8:54 AM

To: Ashton Harp <aharp@asmfc.org>

Subject: Tautog Draft Amendment 1

Mr. Harp,

I would like to share a quick story with you to shed more light on the devastation done to the Tautog fishery in long Island sound. For many years I fished in Shoreham NY for blackfish. It was easy to catch many fish on the rock piles in front of the power plant out to 35 feet of water. Approximately the year 2000 I noticed 50 or so "lobster" pots. The following year 100 pots, then the next year unable to count them.

You can guess the catch steadily went down for me. I did not fish there for a few years due to this. I went back one day around 2007 and fished for 3 hrs and caught only one short. Another boat 100 feet away had same result. He used his anchor winch to raise anchor and it got snagged on a "lobster" pot. When the pot came above water I could see numerous Tautog of various sizes in the pot. Angry at what I saw I started asking around and found out a commercial "fisherman" was tacking fish to the live market twice a day. I called DEC and he said there was nothing they could do he can take a "By-Catch" of 50 fish a day. Are you kidding me! he takes 100 fish a day at \$10 pound and those fish will live forever in those pots as you know they are very hardy. Now there are NO MORE TAUTOG in that area. Great job of fisheries management. This has been going at every rock pile I know of now. The end result is that now I am luck to catch a few small Tautog that swim through escape hole in trap. Devastating!

I would recommend banning the sale of live tautog. That is the only way the fishery will rebound. All the lobsterman switched to fish potting with a devastating effect.

Thank You

Thomas Burns

From: BILL [mailto:hntnfsh00@hotmail.com]
Sent: Wednesday, June 07, 2017 9:56 PM
To: Ashton Harp <aharp@asmfc.org>
Subject: Tautog Draft Ammendment 1

My name is William Morrison. I am a member of the Huntington Anglers Club(over 100 members), Huntington NY.(PastPresident) www.huntingtonanglers.com I am writing in response to the request for comments to "Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog"

Personal Experience: I have fished the Long Island Sound since the 70's. I specialize in shallow water "jig fishing" for Tautog and have given several presentations about it to other clubs for several years. I have been keeping accurate and detailed trip records for every trip since I bought my current boat(s) 25yrs ago. Without getting into details, except for a slight total catch drop off 2 years ago (2015) I have seen generally a static total catch for the last 5 years, with an increase in 2014 and 2016. For the last seven or eight years, I (and my crews)have caught and released approximately 400 to 600 Tautog EACH October on my boat. We have kept a few for meals but very rarely keep even a full limit, even when releasing "keeper"fish. I have also begun tagging released tautog the last 2 seasons and am hoping for returns on those.

Based upon this and several other club members experience and documented Tautog activity records, we believe that the data used as a basis for setting the allowable catch limit (ACL), bag limit and season is inaccurate. If implemented, it will lead to overly restrictive regulation that will have a negative effect on the local economy while not effectively protecting the stock. As conservationists, we agree for the need to regulate the fisheries, but to penalize the recreational angler is unconscionable. We also agree that Tautog should be protected during the spawning season.

Commercial fishing

We understand commercial fisherman have an extended season that includes the spawning period, and a guaranteed 25 fish daily bag limit.

Recommendation

Daily commercial possession limit should be reduced a similar percentage (%) as recreational anglers, with options for close spawning season(s), or other dates during the year.

Adopt a commercial tagging program commencing 2018

**And Commercial fishing should be limited to Rod and Reel Only(pinhooking). No Potting should be allowed as a harvest method for Tautog. Pots are frequently used as "holding pens" for large numbers of fish, continue killing arbitrarily if lost or unattended, and are sometimes fished illegally "unmarked," with no buoys attached (and grappled later), to hide such fishing. This was done locally several years ago, resulting in "fishing out" a small local (formerly very productive) area. That season, 2015, after many years of great catches there, resulted in no tautog caught in immediate area by many of our clubs members. However, after said potting was found out, and much "noise" made against, it was discontinued and following year (2016) saw an instant rebound to the tautog fishery in that area!

It is our opinion until the live tautog market is made illegal, and the high prices paid for said fish are eliminated, enforcement will remain quite difficult!

Stock Assessment:

The 2016 Tautog season had shown something that has not been seen in the almost 20 years. With any number of our members fishing each day, trips produced anywhere from 20-40 fish in

the 10"-15" range, in the period of 60-90 minutes. There were some days that it was not possible to get past these Blackfish, as they devoured any bait presented instantly.

In reading the Draft Amendment it is noteworthy that a fact presented (1.2.1.5 Reproduction – Page 6) indicates that “Tautog normally reach sexual maturity at 3-4 years old (7"-12"). To maintain a position that there is a drastic reduction in breeding stock, in the presence of an overabundance of sexually mature fish is incomprehensible.

Mortality Rate:

The data in the draft clearly cannot be accurate in regards to the speculative mortality rate.

Ø The Tautog is known to be the hardiest of fish. They survive an incredible amount of time after capture. They are almost always found to be full of life whenever they are dressed for consumption. Even after spending many hours in a fisherman's bucket.

Ø Tautog caught and released in the Long Island Sound are generally caught in water less than 30' deep. This means that a fish is not subject to severe pressure change as this would be less than 1 ATM (Atmosphere)

o Current trend in Long Island Sound is to fish for Tog in 10'-15' of water. This represents a very small change in ATM to any fish released.

Ø Tautog are never hooked in the gut. As indicated in the Draft, prey is taken in the pharyngeal teeth prior to swallowing. From an angler's point of view, this means that almost all hooks are in the fish's lip. This is minimally traumatic to the fish.

Ø Released Tautog are always observed swimming back to the bottom upon release.

These observations are presented based upon a review of extensive experience and discussions with fellow anglers. While not members of the scientific community, in this situation, our observations are based on fact.

Conclusion:

The Proposals is overly restrictive, and not based upon relevant data. The effect of implementation on the economy and to an activity that we engage in is significant. The inability to engage in a vibrant fall fishery will result in devastating losses to Party Boats, Charter Boats, local Tackle Shops. All based upon questionable data, in our opinion.

We trust that the Technical Committee and Tautog Management Board will take our recommendations seriously.

Thank You for your time in reading this. I sincerely hope it will help share my, and many of my fellow club member's opinion on the future of Tautog management for the Long Island Sound.

Sincerely,

Bill Morrison, (President Emeritus) Huntington Angler's Club

From: Tom Routliffe [mailto:tom@routliffe.com]

Sent: Friday, July 07, 2017 11:37 AM

To: Ashton Harp <aharp@asmfc.org>

Cc: dmontifish@verizon..ne

Subject: TautogDraftAmendment 1

As an active Rhode Island outdoorsman and angler, I strongly support policies which regionalize fishing regulations which group Rhode Island and Massachusetts in the same regional area. Coast-wise regulations would disadvantage Rhode Island anglers who have conducted responsible and conservation-based fishing practices. REGIONALIZED REGULATIONS are what voting Rhode Island anglers want.

Thanks

Tom R

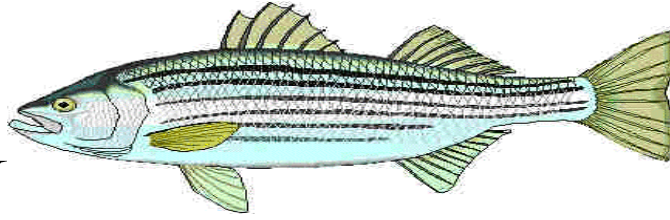
Toni Kerns

From: Richie P <seabassdude@msn.com>
Sent: Thursday, July 13, 2017 7:35 PM
To: Ashton Harp
Subject: Tautog Draft Amendment I) Public Comment

Hi, my name is Rich Puchalski. I've been a commercial waterman in Va. on the Eastern Shore going on 22 years now, and prior to that, a waterman in Staten Island, N.Y. for another 13 years. Have fished for blackfish(tog) for all of that time. I was one of the comm. fisherman that got into the live market when it first started in New York. I moved to the Eastern Shore of Va. to get away from constant burden of regulations that were set upon the commercial side for the blackfish fishery back then. Moved here in 1995, and have watched, especially in the last few years some recreational fishermen coming from other states, fishing for tog and keeping past their limit, which is 3 fish per person in Va. and keeping them live. And here is my argument about the major problem in the fishery of the black market of live fish. I have been to meetings when I lived up north and always pushed for a stop to recreational anglers keeping blackfish live. While your fishing for them, out on the boat is one thing. If you want cull out the small fish during the trip, that's fine. But there is no need for a recreational boat to keep any blackfish alive past pulling their boat up on to their trailer, leaving the marina and going who knows where with the live fish. Why does more of a burden have go to the comm. fishermen. Especially, if this tagging of fish comes to pass. I am not in favor of any type of tagging of my fish.

VMRC here in Va. has been very helpful in keeping the blackfish fishery going in the right direction. From Jack Travelstad to Joe Cimino, and a few others, they have fought for the few of us that do this type of hook and line fishing. And also, cudos to VMRC law enforcement, because they always have their hands full. They can't be everywhere. So please take into consideration my statement and thank you for this opportunity. Rich Puchalski

Sent from [Outlook](#)



GATEWAY STRIPER CLUB, INC.

June 30, 2017

Emailed to: aharp@asmfc.org

Ashton Harp, Fishery Management Plan Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suite 200 A-N
Arlington, VA 22203

RE: *Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog for Public Comment* (the “Draft Amendment”).

Dear Ms. Harp:

Thank you for this opportunity to comment on *Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog for Public Comment* (the “Draft Amendment”). I have observed a very notable decline in the number of tautog available and so the quality of the tautog fishery, and urge the Atlantic States Marine Fisheries Commission (“ASMFC”) to take meaningful action to begin the rebuilding of local tautog stocks.

ASMFC has managed tautog very poorly. In 1996, in its first *Fishery Management Plan for Tautog*, it determined that $F_{\text{threshold}}=0.15$. However, over the past two decades, ASMFC’s Tautog Management Board (the “Management Board”) has consistently lacked the political will to impose regulations that would constrain fishing mortality to that level. Instead, it has concentrated on the short-term social and economic impacts of management decisions, and in an effort to minimize such impact, adopted management measures that were increasingly burdensome, but never restrictive enough to effect a recovery of most local stocks.

Such emphasis on the short term has severely degraded the long-term health of the tautog resource, the tautog fishery and the businesses that engage in such fishery.

The Draft Amendment provides the Management Board with a new approach to tautog management, new biological reference points and a new opportunity to correct past mistakes.

The Draft Amendment acknowledges that “Recovering fish stocks that have been depleted was extremely important to 81% of tautog anglers.” Such overwhelming support for recovering fish stocks provides clear direction to the Management Board: It

must do whatever is necessary to rebuild local stocks, focusing exclusively on their long-term health and ignoring the temptation to impose inadequate management measures out of concern for their short-term effects.

SECTION 2.2: GOALS

Option B, the Revised Goal Statement, should be adopted.

The 1996 goals constitute a laundry list of biological, social and economic considerations that can, as a practical matter, confuse the management process and hamper the recovery of the tautog resource. The Revised Goal Statement, on the other hand, concentrates on the biological aspects of the fishery and the management approach best calculated to rebuild local stocks.

If such rebuilding is accomplished, the social and economic benefits will necessarily ensue.

SECTION 2.3: OBJECTIVES

Option H, which combines Options B-G, should be adopted

The 1996 objectives are in need of revision. Some are vague, some are redundant and none make a clear statement of the need to restore tautog to a biological benchmark. Option H remedies such problems, as it would include Options B, D and H, which eliminate redundancy; Option F, which recognizes the need for defined biological benchmarks and Options C and G, which recognize the contemporary challenges of adopting regional management and combating the illegal harvest and sale of tautog.

SECTION 2.5: BIOLOGICAL REFERENCE POINTS

Option B, which allows new reference points to be adopted without the need for a management document, should be incorporated into the management plan

Tautog, and all other species, should be managed in accord with the best available science. That best available science is most often presented in the form of a peer-reviewed stock assessment.

Once such peer-reviewed stock assessment has been received, its recommendations should be adopted as quickly as possible, for the benefit of both the fish and the fishermen who depend on a healthy resource.

There is no practical need to wait until a management document, with its associated public hearing process and inevitable delays, in order to put an assessment's recommendation in place. The assessment itself would have been prepared by trained, experienced fisheries professionals. Recognized fisheries science experts would have served on the peer review panel. And the Management Board would only adopt the new reference points upon the recommendation of the fishery management professionals of

the Tautog Management Board or Stock Assessment Subcommittee. The Management Board and the public should be able to rest assured that any recommended change in reference points that survived the three-tiered scrutiny of such panels of fishery scientists should adopted.

Creating a management document and going through the public comment process adds nothing to tautog management other than considerable costs in time, money and human resources.

Few if any of the people who will comment on the proposed change in reference points will be fishery scientists actually qualified to endorse or criticize the change. Instead, any comments will be based on whether the proposed change will lead to increased harvests, in which case the proposed new reference points are deemed to be good, or to increased restrictions, in which case such reference points will inevitably be deemed to be bad, without any regard for their scientific merit.

Public hearings are valuable processes when used for their proper purpose, which is to obtain input on social or economic issues such as allocation, gear restrictions or alternative sets of management measures which can each meet the intended biological goal. However, when purely scientific issues are presented, qualified scientists should decide on the appropriate actions.

SECTION 2.7: MAINTENANCE OF STOCK STRUCTURE

Subsection 2.7.1: Fishing Mortality (F) Target

Option B, Managing to the Regional Target F, should be adopted, along with Sub-Option B2, which would require the Management Board to act within one year should overfishing occur in any region; any measures adopted must have at least a 50% chance of success

As noted in the Draft Amendment, tautog do not engage in extensive migrations. The *Tautog Regional Stock Assessment Desk Review Report* advises that there appears to be “some structuring in the coastal population based on limited migration of adults.” Thus, It only makes sense to manage local stocks separately and adopt biological reference points appropriate to each of them. While retaining a single $F_{\text{threshold}}=0.15$ would seem to be a more conservative approach, such approach would neither guard against problems within local stocks nor reflect the best available science.

ASMFC acknowledges that “Catchability and slow growth rate make tautog highly susceptible to overfishing and slow to rebuild.” Thus, should overfishing occur, the Management Board must act quickly to impose measures that will cause such overharvest to end as promptly as practicable, for adopting a new management document always takes time, and even under Sub-option B2, when managers would act within one year of learning that overfishing occurred, “Alternative management measures must be implemented by the second year.”¹ Thus, even the shortest-possible response time would allow overfishing to continue, unabated, for at least two years.

The measures needed to curtail such overfishing would undoubtedly meet with severe vocal resistance, resistance which is often strong enough to tempt managers to put off remedial measures indefinitely, and never address the problem. This is a particularly relevant point in the case of tautog, where the Management Board failed to adopt adequate regulations for more than 20 years. Thus, Sub-option B-1, status quo, is clearly unacceptable. There is also little reason to adopt Sub-option B-3, which would give the Management Board an additional year to act. Once a problem is identified, it needs to be fixed quickly; otherwise, the problem will only cause the health of the stock to deteriorate further, and require more stringent management measures when the recovery eventually begins.

Once the Management Board acts, it must act effectively. Thus, Option B, which would require management measures to have at least a 50% probability of achieving F target. As the history of tautog management has already demonstrated, twenty years of half-measures has only led to a depleted stock. Even under the Option B standard, management measures with a 50% chance of failure would be deemed adequate; to accept a standard lower than that would just be another demonstration of why ASMFC has failed to fully recover a single fish stock in the past twenty years, while federal managers, who have been bound by a 50% minimum standard since 2000,² have seen far more success.

Subsection 2.7.2: F Reduction Schedule

Option B, which would require F to be reduced to target within three years, is the most preferable option presented

Overfishing should not be tolerated. It leads to stock depletion, which in turn causes long-term hardship for fishermen and fishing-related businesses that depend on the depleted resource. As noted in the Draft Amendment, tautog do not recover quickly when overfished.

The Draft Amendment lacks an option that would require overfishing to be ended within a single year, which would have been the preferable course. However, of the options available, Option B, which ends overfishing within 3 years, is preferable.

Option A, which would perpetuate the status quo, and the past 20 years of failed management, is not an acceptable option, while Option C would merely allow overfishing to continue for five years, making recovery that much more difficult.

Subsection 2.7.4: Stock Rebuilding Schedule

Option C, which would require the Management Board to initiate an addendum that would rebuild the stock within 10 years, should be adopted

Once again, it becomes necessary to point out that 81% of tautog anglers support rebuilt fish stocks, and to point out that, with a species as slow to recover as tautog, the sooner decisive action is taken, the less onerous the recovery will ultimately be.

It is always tempting to drag out recovery plans, and so be able to minimize the restrictions placed on the fishing community. However, such incremental recovery rarely yields results; the effects of management measures become ever more difficult to predict as recovery dates are pushed out into the future, and there is always a temptation to do less than necessary in order to avoid public discontent.

10-year rebuilding deadlines have proven effective on the federal level, and have resulted in a level of management success that ASMFC hasn't come close to emulating, for they require managers to take decisive and meaningful action that produces measurable and timely results. The tautog resource, and the tautog fishery, would be far healthier today had a 10-year rebuilding deadline been in place in 1996.

Section 4.1: REGIONAL BOUNDARIES

Tautog would benefit from a regional management approach; however, the four proposed regions divide the waters of New York into two separate regions, which is not workable from a law enforcement perspective; a more practical regional proposal should be considered, for action at ASMFC's Annual Meeting

As noted earlier in these comments, the available data suggests that there are life history differences between tautog in different regions, and thus that a regional approach is desirable.

Unfortunately, any management approach, and most particularly a management approach that puts different regulations in place for different management regions, can only be effective if such regulations are both enforced and enforceable. Thus, while Option B provides for regional management, by splitting New York's waters into two regions, it creates a situation in which regulations will be largely unenforceable off the eastern end of Long Island, where much of the state's tautog fishery is prosecuted.

Boats from ports on the North Fork of Long Island, and to a lesser extent in Montauk, would frequently cross jurisdictional boundaries as they travel to and from fishing grounds in Long Island Sound. Given the realities of marine law enforcement, where at-sea boardings are occasional, at best, that situation means that such boats will most likely be fishing under more liberal New York Bight regulations even when in Long Island Sound, knowing that apprehension is unlikely, which will render the enforcement, and the ultimate effectiveness, of Long Island Sound regulations problematic at best and thus frustrate the intent of the Draft Amendment with respect to Long Island Sound.

The Management Board should defer action on this aspect of the Draft Amendment, propose a more practical regional approach for public comment, and take final action on this issue at ASMFC's Annual Meeting.

Because the proposed management regions cannot be practically enforced, I will not comment on proposed bag limits, size limits and seasons for the regions as currently constituted.

SECTION 4.4: COMMERCIAL HARVEST TAGGING PROGRAM

Option B, which creates a commercial fish-tagging program, should be adopted

As noted in the Draft Addendum, illegal harvest and sale is a serious problem in the tautog fishery. There is an extensive live market that is more than willing to purchase illegally-harvested fish, and there are far too many fishermen willing to supply it. Tautog can be sold to some outlets in large numbers, while local shops and restaurants are willing to purchase smaller quantities of fish.

It is difficult for law enforcement officers to be in position to apprehend persons involved in illegal fish sales at the time that such sale is taking place, and once a tautog enters the stream of commerce, it is currently a practical impossibility to determine its source.

A tagging program will go a long way to alleviate the illegal sale of tautog, as it would render illegal, untagged fish obvious to law enforcement officers when they engage in market patrols, and thus make illegal buyers, more vulnerable to penalties, less likely to engage in the illegal market.

Subsection 4.4.2: Tag application

Option A, requiring fishermen to tag all tautog prior to offloading, should be adopted

As noted above, illegal tautog are sold in a variety of markets. Requiring tags to be attached by fishermen, before offloading, would prevent fishermen from exceeding daily trip limits or other quotas, from selling excess fish into minor markets that are unlikely to receive much law enforcement scrutiny. Experience with illegal harvest tied to the Mid-Atlantic Fishery Management Council's research set-aside program³ demonstrates that even larger dealers will cooperate with fishermen to conceal and market fish landed in contravention of the law.

Requiring tautog to be tagged before landing gives law enforcement the greatest opportunity to detect illegality before the fish enter the stream of commerce.

CONCLUSIONS

In summary, it is important that the Management Board act quickly and decisively to begin the rebuilding of local tautog stocks.

With respect to particular proposals, I urge the Management Board to adopt the following measures:

- With respect to Section 2.2, Goals, Option B, the Revised Goals;
- With respect to Section 2.3, Objectives, Option H, which includes Options B-G;
- With respect to Section 2.5, Biological Reference Points, Option B, which permits adoption of new reference points without the need for a management document;
- With respect to Section 2.7.1, Fishing Mortality (F) Target, Option B, a regional mortality target; Sub-option B2, which requires Management Board action within one year after overfishing occurs; and un-numbered Option B, which would require measures to have at least a 50% probability of achieving F target;
- With respect to Section 2.7.2, F Reduction Schedule, Option B, three year achievement of F target;
- With respect to Section 2.7.4, Stock Rebuilding Schedule, Option C, requiring an addendum that would rebuild the stock within 10 years;
- With respect to Section 4.1, Regional Boundaries, I ask that the Management Board reconsider the options, to prevent splitting New York into two different management regions and creating an untenable law enforcement problem;
- With respect to Section 4.4, Commercial Harvest Tagging Program, Option B, which would require commercial tagging; and
- With respect to Section 4.4.3, Tag Application, Option A, which would require tags to be affixed prior to offloading.

Thank you for considering my views on these matters.

Sincerely,

Gene Ander
Gateway Striper Club (Chairman of Conservation Committee)

cc.

James Gilmore – NY State Dept. of Environmental Conservation
Division of Marine Resources (Vice-Chair), James.Gilmore@dec.ny.gov

Ed Rapp, Gateway Striper Club, Inc. (President)

Ron Turbin, Gateway Striper Club, Inc. (Member), Coastal Conservation
Association- NY (Conservation Representative)



To: John Gilmore - Director Marine Division NYSDEC
John Maniscalco NYDEC, Director Finfish
From: Anthony Vernola, President, Huntington Anglers Club, Huntington NY 11740

June 6, 2017

My name is Anthony Vernola. I am the President of the Huntington Anglers Club, Huntington NY. www.huntingtonanglers.com I am writing in response to the request for comments to "Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog"

Personal Experience: I have fished the Long Island Sound since 1978. I have held a US Coast Guard Operator Certificate since 1972. I am also a member of The Professional Association of Dive Instructors, having logged many dives in the Long Island Sound.

The Huntington Anglers Club

Chartered in 1948, currently has more than 100 active members that engage in recreational sport fishing. The focus for our club is fishing and conservation in the Long Island Sound from Manhasset Bay to Port Jefferson, extending north to the Connecticut shoreline.

Based upon several club members experience and documented Tautog activity records, we believe that the data used as a basis for setting the allowable catch limit (ACL), bag limit and season is inaccurate. If implemented, it will lead to overly restrictive regulation that will have a negative effect on the local economy while not effectively protecting the stock. As conservationists, we agree for the need to regulate the fisheries, but to penalize the recreational angler is unconscionable. We also agree that Tautog should be protected during the spawning season.

Commercial fishing

We understand commercial fisherman have an extended season that includes the spawning period, and a guaranteed 25 fish daily bag limit.

Recommendation

Daily commercial possession limit should be reduced a similar percentage (%) as recreational anglers, with options for close spawning season(s), or other dates during the year.

Adopt a commercial tagging program commencing 2018

Stock Assessment:

The 2016 Tautog season had shown something that has not been seen in the almost 20 years. With any number of our members fishing each day, trips produced anywhere from 20-40 fish in the 10"-15" range, in the period of 60-90 minutes. There were some days that it was not possible to get past these Blackfish, as they devoured any bait presented instantly.

In reading the Draft Amendment it is noteworthy that a fact presented (1.2.1.5 Reproduction – Page 6) indicates that “*Tautog normally reach sexual maturity at 3-4 years old (7”-12”)*. To maintain a position that there is a drastic reduction in breeding stock, in the presence of an **overabundance** of sexually mature fish is incomprehensible.

Mortality Rate:

The data in the draft clearly cannot be accurate in regards to the speculative mortality rate.

- The Tautog is known to be the hardiest of fish. They survive an incredible amount of time after capture. They are almost always found to be full of life whenever they are dressed for consumption. Even after spending many hours in a fisherman’s bucket.
- Tautog caught and released in the Long Island Sound are generally caught in water less than 30’ deep. This means that a fish is not subject to severe pressure change as this would be less than 1 ATM (Atmosphere)
 - Current trend in Long Island Sound is to fish for Tog in 10’-15’ of water. This represents a very small change in ATM to any fish released.
- Tautog are never hooked in the gut. As indicated in the Draft, prey is taken in the pharyngeal teeth prior to swallowing. From an angler’s point of view, this means that almost all hooks are in the fish’s lip. This is minimally traumatic to the fish.
- Released Tautog are always observed swimming back to the bottom upon release.

These observations are presented based upon a review of extensive experience and discussions with fellow anglers. While not members of the scientific community, in this situation, our observations are based on **fact**.

Conclusion:

The Proposal is overly restrictive, and not based upon relevant data. The effect of implementation on the economy and to an activity that we engage in is significant. The inability to engage in a vibrant fall fishery will result in devastating losses to Party Boats, Charter Boats, local Tackle Shops. All based upon questionable data, in our opinion.

We trust that the Technical Committee and Tautog Management Board will take our recommendations seriously.

Respectfully,

Anthony Vernola
President
Huntington Anglers Club
Vmonk914@aol.com

Jersey Coast Anglers Association
Working for Marine Recreational Anglers

1594 Lakewood Road, Unit 13, Toms River, NJ 08755

TEL.: 732-506-6565 - FAX: 732-506-6975



7/11/17

ASMFC
Ashton Harp
1050 North Highland St.
Suite 200 A-N
Arlington, Va. 22201

Ashton,

The Jersey Coast Anglers Association appreciates the opportunity to comment on Draft Amendment 1 to the Interstate Management Plan for Tautog. JCAA believes that it makes sense to manage tautog on a regional basis as stated in section 4.2, since they predominantly migrate east and west rather than north and south. However, we strongly favor state-by-state measures with conservation equivalency as stated in section 4.2.4.1 and shown in table 26. We trust that the New Jersey Marine Fisheries Council will establish regulations that will properly protect the species but at the same time do what is best for the majority of our fishermen.

Additionally, in section 4.4 we favor option B which would necessitate a commercial harvest program. We also favor option A of section 4.4.3 which would require commercially permitted fishermen to tag tautog at the time of harvest or prior to offloading. This must be done to help control the widespread sale of tautog especially in the live fish market.

Lastly, we sympathize with the proposed Connecticut/New York region which is looking at a 48-50% cut in their harvest. We would not like that at all if it was proposed for our region. We believe the science used is questionable and if cuts must be made, they should be phased in gradually. We also hope that better science will be developed and used for management decisions in order to keep our stocks at sustainable levels.

Respectfully submitted,
John Toth

President, JCAA

From: npboa@sbcglobal.net [mailto:npboa@sbcglobal.net]
Sent: Thursday, June 15, 2017 5:34 PM
To: Ashton Harp <aharp@asmfc.org>
Subject: Proposed Black Fish Regulations

Hello Ashton,

Below you will find copied a letter to you that I am sure you are about to see many times over. The letter is so well written, researched and to the point that there is no way to improve upon it. For that reason I am copying it to you in its entirety as the official comments of National Party Boat Owners Alliance in regard to the present proposed Black Fish regulations. It is our suggestion that you carefully read the alternative that is being presented, think about the damage to an already hurting industry that your current proposal will do, then take the advice from our members and adopt the alternative.

Thanks for listening,
Capt. Brad Glas
Pres. National Party Boat Owners Alliance.

June 13, 2017

Ashton Harp
Fishery Management Plan Coordinator
1050 North Highland St, Suite 200 A-N
Arlington, VA 22201

Via email: aharp@asmfc.org

Re: Tautog Draft Amendment 1

Dear Ashton,

After careful review of Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog, I write to offer the following comments as a longtime charter boat owner and operator in the Long Island Sound region. The charter and party boat community shares with ASMFC a vested interest in ensuring a healthy tautog stock that can be harvested in a sustainable manner. I offer these comments in the hope that ASMFC will make essential changes to the Draft Amendment – changes that will protect the fishery and our industry in equal measure.

As currently envisioned by ASMFC, the Draft Amendment seeks to reduce the commercial and recreational harvest for the LIS region by a minimum of 47.2%. It does so by prescribing recreational regulations that make no distinction between party / charter boats and private boats, ignoring the fact that for the last three years, the former has accounted for just over one-tenth of total LIS tautog landings. During that time, charter and party boats represented only 11.5% of the Connecticut tautog harvest, and 13.1% of the combined Connecticut and New York harvest by numbers of fish. To regulate party / charter boats and private boats in the same way is to disregard the disparate impact each has on the fishery. That approach is ineffectual to the extent that it imposes drastic cuts on a group that is responsible for just a fraction of the overall harvest. Such cuts further fail to consider not just the thousands of jobs created and supported by the industry, but also the dollars we and our customers inject into local economies.

Over the past few decades the charter and party boat industry has felt the effects of an unrelenting progression of ever-tightening regulations. Reductions to every key fishery – striped bass down to 1 fish per person, fluke to 3 fish per person, and continuing cuts to seabass – have left our industry reeling. The shock wave of those regulations continues to reverberate throughout the LIS region.

Tautog regulations in particular have evolved from 25 fish at 12” to 10 fish at 14” to 4 fish at 14”, then 15”, and finally to 4 fish at 16”. Four fish per person leaves us with the bare minimum for a viable trip that has a hope of enticing customers. Allowing fewer than 4 fish per person will all but end blackfishing for charter and party boats. Losing those trips would shorten the 25-week prime of our season by 6 weeks – a reduction of nearly 25%. By doing so, Draft Amendment 1 will cripple a group that accounts for only 13.1% of total LIS tautog landings.

We implore ASMFC to craft tautog regulations that treat charter and party boats as distinct from private boats. Rhode Island has done so for several years to great success.

Of course all parties with a stake in the continued health of the tautog fishery must contribute to the overall reduction of the harvest and we certainly do not consider ourselves immune from the required cuts.

We propose the following changes to the current management measures for charter and party boats in the LIS region:

1. Eliminate the spring (April 1 – April 30) and summer (July 1 – August 31) open seasons in Connecticut;
2. Shorten the open fall season to October 12 – December 1 for Connecticut and New York; and
3. Impose a possession limit of 4 fish and a slot limit of fish from 16” to 22” to protect large egg-bearing females.

We appreciate ASMFC’s effort to solicit public comments regarding Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog. Please consider revising the Draft Amendment to include regulations for charter and party boats that recognize the contributions we make to our communities and the relatively small impact we have on the tautog fishery.

Sincerely,



NEW JERSEY COUNCIL OF DIVING CLUBS

32 Stratford Road
Tinton Falls, NJ 07724-3143
www.scubanj.org



COMMENT - REVISED

Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

7/10/17

Ashton Harp
Atlantic States Marine Fisheries Commission
1050 North Highland St, Suite 200 A-N
Arlington, VA 22201

Dear Ashton Harp:

The New Jersey Council of Diving Clubs (NJCDC) is an organization of 14 sport diving clubs in New Jersey and nearby states. The sport diver/spearfisherman can actually observe Tautog in their natural environment off the jetties, natural rock bottom, wrecks and artificial reefs along the Jersey coast and sees things that others don't. Tautog is one of the 3 most important fish (tautog, fluke, & sea bass) that sport divers take in this area. All states from Mass to Florida allow spearfishing. The NJCDC has concerns about certain wording in this Draft Amendment 1.

Regarding Objectives (2.3) , the NJCDC would mention the following:

1. We are against Option C, D, and H or forcing management measures to be compatible with NY state because NY tries to push the open season into late fall and early winter when the Tautog move offshore and the water cools. Most sport diving/spearfishing is done during the summer and early fall and as a result the sport diver/spearfishermen would be excluded. And so would those hook and line fishermen that fish the surf, jetties and inlets.
2. Regarding Option E, the NJCDC agrees that hard habitat is important. Spearfishermen and fishery scientists can attest to the importance of jetties and inlets as habitat for Tautog during the warmer months. Unfortunately the craze for sand replenishment since Hurricane Sandy has caused the ends of some jetties to go from 10 feet deep to 3 feet destroying critical habitat for Tautog. NJ has done a good job of creating artificial reefs habitat, but Tautog can only be taken from boats on the reefs.
3. The NJCDC agrees with Option F with emphasis on ecological and socio-economic impacts.
4. The NJCDC agrees with Option G to minimize the factors contributing to illegal harvest.

Regarding Biological Reference Points (2.5), The NJCDC prefers Option A (Status Quo) or modification by Management Document. One of the problems is that the most recent stock assessment is often wrong and stock assessments have a habit of going up and down from year to year. Taking drastic action based on the most recent stock assessment has caused serious problems in the recreational fishery. Modification of the management document slows the process down and often allows another stock assessment as back up. Putting too much faith in and rushing a very imperfect fishery science is a mistake without common sense backup.

Regarding 2.7.1 Fishing Mortality (F) the NJCDC would be in favor of Sub-Option B1 or no time requirement. This will allow the maximum flexibility for the Board and the public. Regarding codifying level of risk for the TC, Option A would allow the maximum flexibility. Regarding 2.7.2 or Reduction Schedule if F is exceeded, Option A or no time frame would allow the Board the maximum flexibility. Regarding 2.7.4 or Stock Rebuilding Schedule, I would prefer Option B or a stock rebuilding schedule can be developed via an Addendum.

Regarding 4.1 or Regional Boundaries, the NJCDC believes that Regional Management may be the right approach for Tautog. However, we have reservations about matching NJ with New York and would rather have been combined with Delaware. New York has serious pollution problems out of NY City, a large illegal fishery for Tautog, serious Tautog problems for Long Island Sound, and combining NJ with NY really limits the season for NJ. On the one option the Amendment allowed regarding Long Island Sound, the NJCDC prefers Sub-Option B1 that does not add portions of Long Island Sound to the NJ-NY Bight Management Area. However, no region, including LI Sound, should be facing a 48% to 50% reduction as that will destroy the recreational Tautog fishery there and is far too drastic.

Regarding 4.2 or Regional Management Measures, the NJCDC is absolutely opposed to proposed regional management measures in 4.2.4.1 or the NJ-NYB on at least two major issues. The first issue is that most recreational sport diving and spearfishing is done during the summer months and early fall. The NJCDC is not opposing a June and July closure during the peak spawning season. But we do want to keep August and September open even if only one fish. Previous NJ rules specifically allowed one fish during the late summer months to allow sport divers and hook and line fishermen from the shore (jetty jockeys, inlet and surf fishermen) to take Tautog before that species move offshore when the water cools. Perhaps one Tautog in August and September even at 16 inches or above would be a good compromise. Notice the proposed recreational DelMarVa rules that include July 1 to Dec 31 (almost all the summer). The NJCDC supports Conservation Equivalency, but does not want the Tautog season the same as NY. That late season really only allows Tautog to be taken by boat or party boat as an offshore fishery.

The other big issue for sport divers and spearfishermen relates to a statement on p 78 (NJ-NYB region chose a 15-18 inch slot...). The problem with a small slot is that the spearfisherman has to safe side by taking fish considerably larger than the minimum size limit to insure a legal fish. With a slot, the spearfishermen not only must take larger fish, but also has to safe side downward from the maximum, which is next to impossible with such a small slot.

Of the proposed management options on page 79, the least objectionable is a NJ state-specific management option as found in Table 26 A1 and not NYB. But the NJCDC wants all or most of August open for Tautog. No Slot Limit! If there is a regional working group, make sure a sport diver or spearfishermen is represented on it.

Why does the proposed commercial rules for NJ-NYB include taking Tautog during the June and July peak spawning season under State-specific Reduction (p 80) when the proposed recreational rules protect the spawning season? The NJCDC supports the proposed Commercial Harvest Tagging Program (4.4, Option B) to reduce the illegal fishery in Tautog.

Respectfully,

Jack Fullmer, Legislative Committee

North Fork Captains Association

PO Box 129 Peconic N.Y. 11958

Ms. Ashton Harp

FMP Coordinator

1050 N. Highland St. Suite A-N

Arlington Va.

Dear Ms. Harp,

I am writing on behalf of the North Fork Captains Association. We are an organization of professional mariners on the East End of Long Island N.Y.

After careful review by our membership Of Amendment 1 of the Fisheries Management Plan for Tautog we absolutely oppose and do not support this document. We also find the regional management plan as outlined in this document to be particularly abhorrent and devastating to us.

The concept of splitting Long Island into North Shore rules and South Shore rule would create an enforcement nightmare as we have been told many times. Clearly this disparity would be ruinous and likely fatal to the LI Sound party/charter boat fleet.

We continue to absorb draconian reductions and cannot take more. We know that Party/Charter boats are taking a relatively small percentage of the tautog. We have already gone from 14" to 16" and from 10 fish to 4 fish and no longer have a spring season. How many reductions can we endure and expect to survive? People need to make a living and support their families. This plan will not do it !

There are areas that need to be addressed and controlled as we all well know . The very illegal live market is rampant. There is considerable illegal potting going on by poachers. Clearly there needs to be more enforcement although we recognize the difficulties. It is obviously easier to regulate the law-abiding fishermen to compensate for the law- breakers

Captain Robert W. Busby Jr -President NFCA

New York Fishing Tackle Trade Association
P.O. Box 3210
Patchogue, NY 11772
nyftta@gmail.com

July 14, 2017

Ashton Harp
FMP Coordinator,
1050 N. Highland St., Suite A-N
Arlington, VA 22201

RE: Public Comments for Tautog Draft Amendment 1

Dear Ms. Harp

The New York Fishing Tackle Trade Association (NYFTTA) represents retail and wholesale bait and tackle dealers in the New York Marine district. The livelihood of our members, our industry, depends upon healthy stocks of many species of fish. Our mission is not just to promote the sport of fishing, but also to do our part in conserving resources for the future. Conserving resources for the future is not just managing the fishery from a conservation or regulatory approach, but also accounting for the socioeconomic impact of such regulations and maintaining fair and equitable access.

After review of Amendment 1 to the Interstate Fisheries Management Plan for Tautog and speaking with several stakeholders in the industry both recreational and commercial, the New York Fishing Tackle Trade Association officially opposes and does not support this amendment. We particularly oppose regional management for Tautog as it is outlined in this draft amendment.

The point of regional management of a particular stock is to mitigate the burden of any harsh reductions to any one state or region. Regionalization, as it is proposed in this amendment, contradicts this and disproportionately places the burden one region and a state due to what many believe to be an unnecessary and invalid stock assessment. The way in which the regions are defined in this amendment pose unsolvable enforcement issues in New York's marine district. Splitting our north and south shores, placing them into two separate regions with such vast differences in regulations, along with shared bodies of water on our east end, make enforcing these regulations impossible.

The 2015 stock assessment shows that recruitment is up along the coast. Stakeholders in the industry, both recreational and commercial, are seeing a rather large population of fish in the 12-15 inch range. We strongly believe that we have not given the current management plan enough time to work to achieve the last proposed F-target and SSB-target. Due to the fact that Tautog are not Federally managed and do not fall legally under the rebuilding time constraints of the Magnuson-Stevens Act, the New York Fishing Tackle Trade Association, requests and supports "**No Change**" in Tautog management as to allow the current management plan time to reach its goals.

Respectfully Submitted by,

Melissa Dearborn
Vice President, NYFTTA



NEW YORK SPORTFISHING FEDERATION

324 South Service Rd., Suite 302, Melville, NY 11747

www.nysf.org

Ashton Harp
FMP Coordinator,
1050 N. Highland St., Suite A-N
Arlington, VA 22201

Dear Ms. Harp,

After careful review of Amendment 1 to the Interstate Fisheries Management Plan for Tautog and speaking in length with several stakeholders in the industry both recreational and commercial, the New York Sportfishing Federation officially opposes and does not support this amendment. We particularly oppose regional management for Tautog as it is outlined in this draft amendment.

The point of regional management of a particular stock is to mitigate the burden of any harsh reductions to any one state or region. Regionalization, as it is proposed in this amendment, contradicts this and punishes one region and a state due to what many believe to be an unnecessary and invalid stock assessment.

How the regions are defined in this amendment pose unsolvable enforcement issues in New York's marine district. Splitting our north and south shores, placing them into two separate regions with such vast differences in regulations, along with shared bodies of water on our east end, make enforcing these regulations impossible.

The 2015 stock assessments show that recruitment is up along the coast. Stakeholders in the industry, both recreational and commercial, are seeing a rather large population of fish in the 12-15 inch range. Biological fact that Tautog are slow growing, we strongly believe that we have not given the current management plan enough time to work to achieve the last proposed F-target and SSB-target.

Due to the fact that Tautog are not Federally managed and do not fall legally under the rebuilding time constraints of the Magnuson-Stevens Act, the New York Sportfishing Federation requests and supports "**No Change**" in Tautog management as to allow the current management plan time to reach its goals.

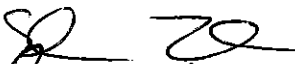

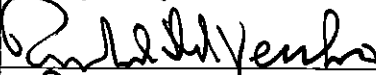

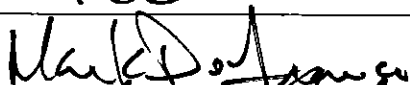
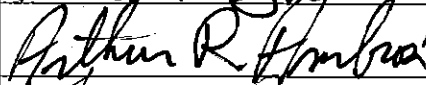


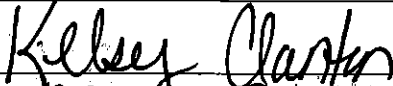
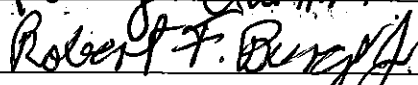
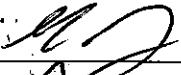
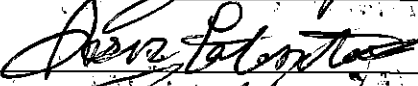

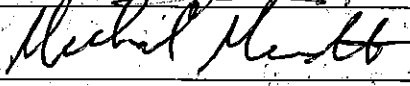

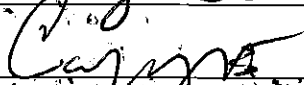
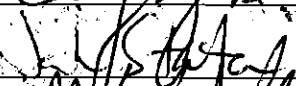

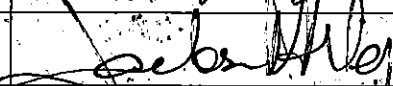
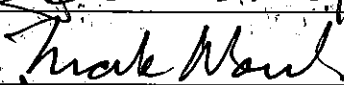
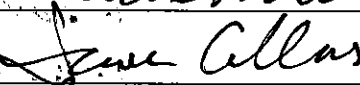
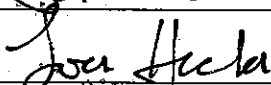
Sincerely,

Capt. Joe Paradiso
President-New York Sportfishing Federation
New York State Marine Resource Advisory Council

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

| | |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petition summary and background | ASMFC has proposed Draft Amendment 1, which seeks to dramatically reduce the tautog harvest for the LIS region. It does so by prescribing regulations that make no distinction between party / charter boats and private boats, despite the fact that party / charter boats represent just 13.1% of the overall LIS tautog harvest. |
| Action petitioned for | We, the undersigned, are concerned citizens who urge ASMFC to revise Draft Amendment 1 to include unique management measures for charter and party boats in the Long Island Sound region that are more generous than measures for private boats. |

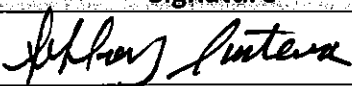



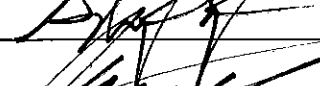




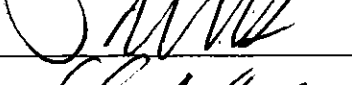
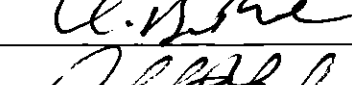
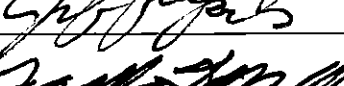


| Printed Name | Signature | Date |
|-------------------|--------------------------|---------|
| Steffan Danz | <i>Steffan Danz</i> | 6-17-17 |
| Tom Miner | <i>Tom Miner</i> | 6-17-17 |
| George M. Lassek | <i>George M. Lassek</i> | 6-17-17 |
| Bill Cooke | <i>Bill Cooke</i> | 6-17-17 |
| Nick Vincenzo | <i>Nick Vincenzo</i> | 6-17-17 |
| Matt Basigallo | <i>Matt Basigallo</i> | 6-17-17 |
| Pete Cote | <i>Pete Cote</i> | 6-17-17 |
| Don Jennings | <i>Don Jennings</i> | 6/17/17 |
| Jerry McKee | <i>Jerry McKee</i> | 6/17/17 |
| Timothy A. Roach | <i>Timothy A. Roach</i> | 6/17/17 |
| Richard H. Powell | <i>Richard H. Powell</i> | 6/17/17 |
| Andy Fusco | <i>Andy Fusco</i> | 6/17/17 |
| Mike Fusco | <i>Mike Fusco</i> | 6-17-17 |
| Dwight Calkins | <i>Dwight Calkins</i> | 6-17-17 |

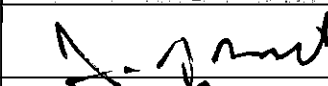


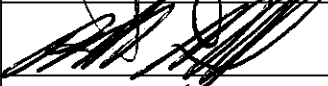


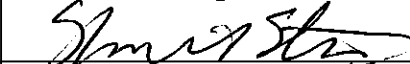

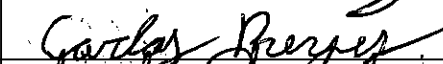

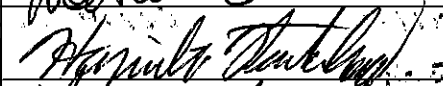






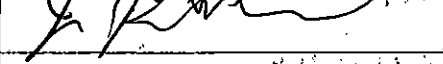
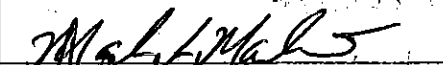




| Printed Name | Signature | Date |
|---------------------|--------------------------------------------------------------------------------------|---------|
| Stephen Zwart |  | 6/24 |
| Scott Adamson |  | 6/25 |
| Rochard Del Vecchia |  | 6/25 |
| EFF Clanton |  | 6/25 |
| Mark DoFranco |  | 6/25 |
| Art Ambrosi |  | 6/25 |
| Laurie Perrin |  | 6/25 |
| Mulenie Stokes |  | 6/25 |
| Kelsey Clanton |  | 6/25 |
| ROBERT BURGER JR |  | 6/26 |
| Mike Salkauskas |  | 6/26 |
| Jason Patemosto |  | 6/26 |
| GENA WASYNCZON |  | 6/26 |
| MIKE MEREDITH |  | 6/26 |
| Greg Boutot |  | 6/26 |
| CARLO MONTAGANO |  | 6/26 |
| Jenna Stanton |  | 6/26 |
| MIKE WALL |  | 6/26/17 |
| Jessica Whaley |  | 6/26/17 |
| Mark Ward |  | 6/26/17 |
| Jane Collins |  | 6/26/17 |
| Luis Hecla |  | 6/26/17 |



Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

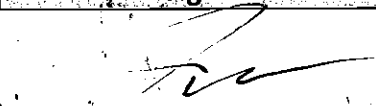
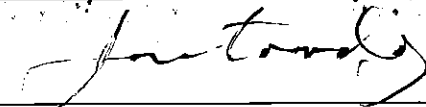


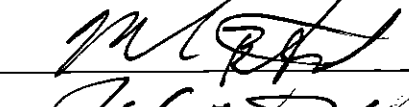
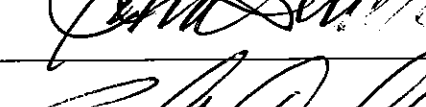
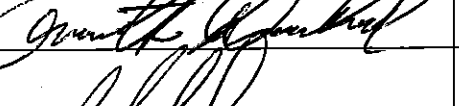
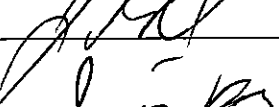

| | |
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| Petition summary and background | ASMFC has proposed Draft Amendment 1, which seeks to dramatically reduce the tautog harvest for the LIS region. It does so by prescribing regulations that make no distinction between party / charter boats and private boats, despite the fact that party / charter boats represent just 13.1% of the overall LIS tautog harvest. |
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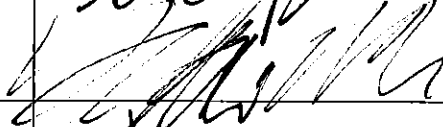


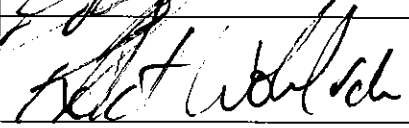


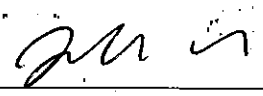
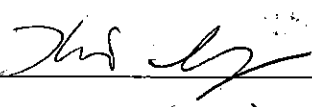

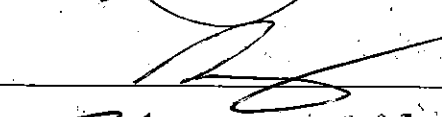
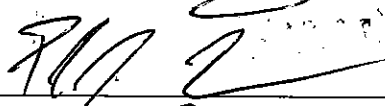

| Printed Name | Signature | Date |
|--------------------|--------------------------------------------------------------------------------------|---------|
| Jeffrey Santana |  | 6-16-17 |
| Emory Allaire |  | 6-16-17 |
| JOSEPH Myers |  | 6/16/17 |
| Patrick McCarthy |  | 6/16/17 |
| Gene Segaline Sr |  | 6/16/17 |
| Gene Segaline III |  | 6/16/17 |
| Rolando Crisostomo |  | 6/18/17 |
| KEN GALLUP |  | 6/20/17 |
| Ralph Hedenberg |  | 6/20/17 |
| Jason Mitchell |  | 6/20/17 |
| Bill Aston |  | 6/20/17 |
| Chris Burwill |  | 6/20/17 |
| Jeff York |  | 6/20/17 |
| Frank Gonzalez |  | 6/20/17 |

| Printed Name | Signature | Date |
|--------------------|--------------------------------------------------------------------------------------|---------|
| Jim Bernetic |  | 6/20/17 |
| John Bernetic |  | 6/20/17 |
| Tyler Somme |  | 6/20/17 |
| Paul Pritchard |  | 6/21/17 |
| Stephen Peterson |  | 6/21/17 |
| Curran Sustrzen |  | 6/21/17 |
| Kenneth STARKS |  | 6-21-17 |
| Derek Moy |  | 6-21-17 |
| Carlos Reyes |  | 6-21-17 |
| MATTHEW STRAITER |  | 6-21-17 |
| Hamilton Pritchard |  | 6/21/17 |
| Castlin Dilonzo |  | 6/21/17 |
| PAUL HUME |  | 6-22-17 |
| Brian Olesnevik |  | 6/20/17 |
| James Maulucci |  | 6-23-17 |
| BRYAN BRIGGS |  | 6/23/17 |
| JOSH PICKETT |  | 6/23/17 |
| MARK MAUCCI |  | 6-23-17 |
| JOHN MAUCCI |  | 6-23-17 |
| JERR CLEMENS |  | 6-23-17 |
| JIM MAGDON |  | 6-23-17 |
| Jim Covill |  | 6-23-17 |
| John Rookette |  | 6/27/17 |

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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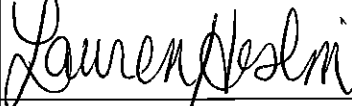
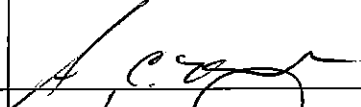
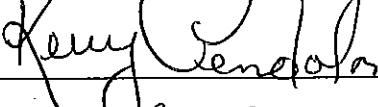
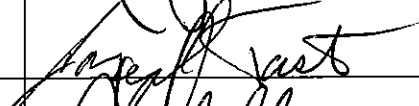
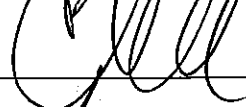


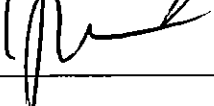
| Printed Name | Signature | Date |
|--------------------|--------------------------------------------------------------------------------------|---------|
| JOHN MEOLA |  | 6/15/17 |
| JOSE D. TORRADO JR |  | 6/15/17 |
| Kevin Kaarlsen |  | 6/15/17 |
| SHAWN STALTER |  | 6-15-17 |
| MARK BANTA SR |  | 6-15-17 |
| JOHN SMITH |  | 6-15-17 |
| Tim Debeck |  | 6-15-17 |
| Joe Griebel |  | 6/15/17 |
| Jairo Vasquez |  | 6-15-17 |

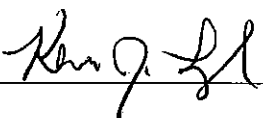
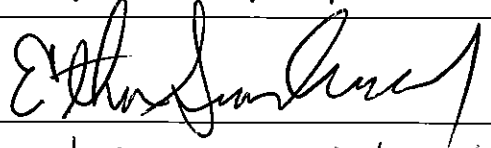
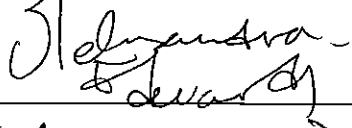
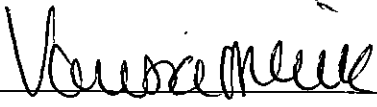
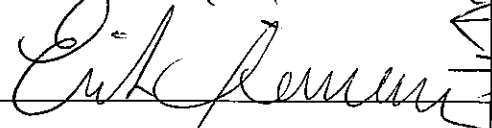


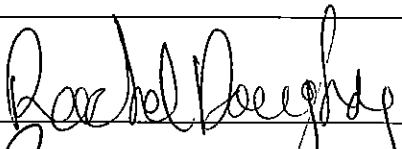
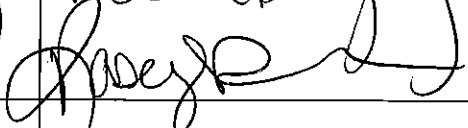
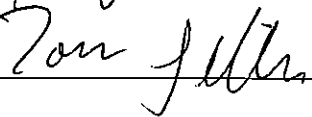
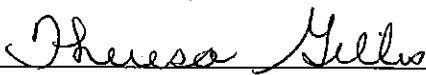
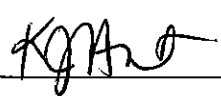
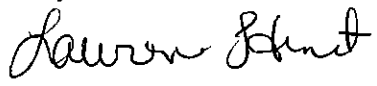
| Printed Name | Signature | Date |
|----------------|--------------------------------------------------------------------------------------|---------|
| DOM CHIEFFALO |  | 6/23/17 |
| Rich Melycher |  | 6/23/17 |
| James Maroon |  | 6/23/17 |
| Rob Jones |  | 6/23/17 |
| ROBERT WOHLRAB |  | 6/23/17 |
| Karl John |  | 6/24/17 |
| MAX FILMORE |  | 6/24/17 |
| Jeff Gilbert |  | 6/24/17 |
| Kevin Supary |  | 6/24/17 |
| Andre Dovaing |  | 6-24-17 |
| Rob Gilbert |  | 6/24/17 |
| Pete Towne |  | 6/24/17 |
| Levi Jackson |  | 6/24/17 |

8

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

| | |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petition summary and background | ASMFC has proposed Draft Amendment 1, which seeks to dramatically reduce the tautog harvest for the LIS region. It does so by prescribing regulations that make no distinction between party / charter boats and private boats, despite the fact that party / charter boats represent just 13.1% of the overall LIS tautog harvest. |
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| Printed Name | Signature | Date |
|--------------------------|-------------------------------------------------------------------------------------------------|---------|
| JOSEPH P WESSELLI II |  | 6/15/17 |
| Lauren Heslin |  | 6/15/17 |
| Mr. Hernandez |  | 6.15.17 |
| KERRY PENNOLTA |  | 6-15-17 |
| Joseph Toste |  | 6/15/17 |
| Chris obrey |  | 6-15-17 |
| STEVE EMERSON |  | 6-15-17 |
| DON KENNAUGH |  | 6-15-17 |
| Tom Koepf |  | 6/15/17 |

| Printed Name | Signature | Date |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------|
| KEVIN LYNCH |  | 6-15-17 |
|  | Ethan Sunderland | 6-15-17 |
| Oleksandra Edwards |  | 6/15/17 |
| Vanessa McGowan |  | 6/15/17 |
|  | ERIK Jimenez | 6/15/17 |
| HAROLD KENNEY |  | 6/15/17 |
| STEVE KEELER |  | 6/15/17 |
| Rachel Dougherty |  | 6/15/17 |
| Kasey Donovan |  | 6/15/17 |
| Tom Gillis |  | 6-15-17 |
| Theresa Gillis |  | 6-15-17 |
| Kimberly Hunt |  | 6-15-17 |
| Lauren Hunt |  | 6-15-17 |

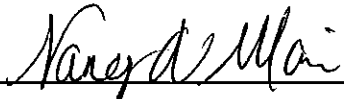
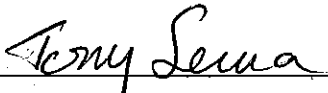

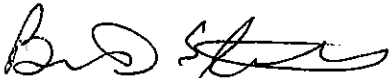

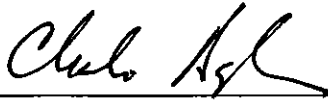
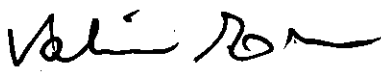
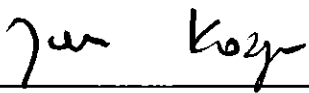
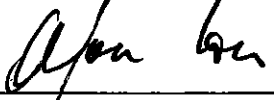
Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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| Printed Name | Signature | Date |
|---------------------|----------------------------|----------|
| MICHAEL Joy | <i>Michael Joy</i> | 06-14-17 |
| GEORGE STORZ | <i>George Storz</i> | 06-14-17 |
| Joy Borrello | <i>Joy Borrello</i> | 6-14-17 |
| Peter Lawrence | <i>Peter Lawrence</i> | 6-14-17 |
| Mikhail M. Montchin | <i>Mikhail M. Montchin</i> | 6-14-17 |
| Darryl Allen | <i>Darryl Allen</i> | 6-14-17 |
| Mark DeSantes | <i>Mark DeSantes</i> | 6-14-17 |
| JON BLANCHETTE | <i>Jon Blanchette</i> | 6-14-17 |
| BARRY Federico | <i>Barry Federico</i> | 6-14-17 |

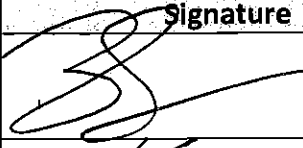

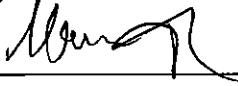

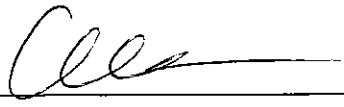
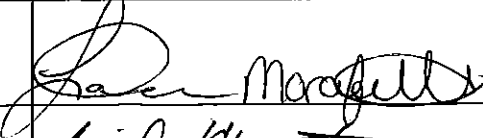
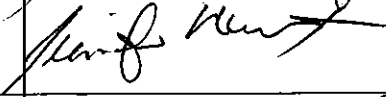
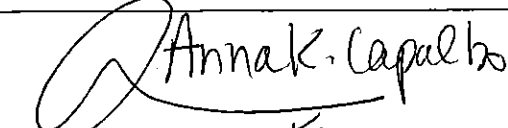
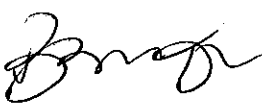
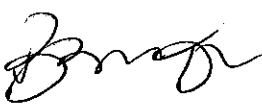
Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

| | |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Petition summary and background | ASMFC has proposed Draft Amendment 1, which seeks to dramatically reduce the tautog harvest for the LIS region. It does so by prescribing regulations that make no distinction between party / charter boats and private boats, despite the fact that party / charter boats represent just 13.1% of the overall LIS tautog harvest. |
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| Printed Name | Signature | Date |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------|
| Nancy Main |  | 6-15-17 |
| Tom Seria |  | 6-15-17 |
| MIKE FORTE |  | 6-17-17 |
|  | Bruce Starkweath | 6-17-17 |
| C Thomas Philbrick |  | 6-18-2017 |
| CHARLIE AGUEDA |  | 6-18-2017 |
| VALERIU EMILIAN |  | 6-18-2017 |
| JAN KOZYRA |  | 6-18-2017 |
| ALFONSO CORREA |  | 6-18-2017 |

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

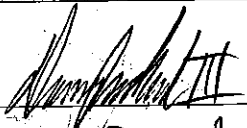
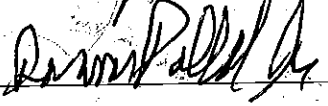

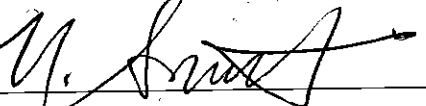

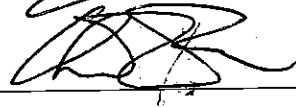
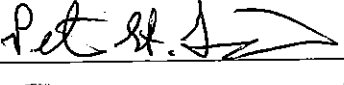


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| Printed Name | Signature | Date |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------|
| BRIAN SHANNON |  | 6/22/17 |
| KRISTEN PEDERSEN |  | 22 June 2017 |
| Mary Tabor |  | 6/20/17 |
| Kate Leandro |  | 6/22/17 |
| Candice Carroll-Beebe |  | 6/22/17 |
| Romina DeGiacomo | Romina DeGiacomo | 6/22/17 |
| Lodawn Morabille |  | 6-22-17 |
| Jennifer Hunt |  | 6/23/17 |
| Diane M Quir | Diane M Quir | 6/23/17 |
|  |  | 6/23/17 |
| Bonnie Kay |  | 6/23/17 |

| Printed Name | Signature | Date |
|----------------|-----------------------|-----------|
| George Main | <i>George Main</i> | 6-24-17 |
| David Campbell | <i>David Campbell</i> | 6-24/2017 |
| Joe Main | <i>Tiger Main</i> | 6-21-17 |
| Denise Potvin | <i>Denise Potvin</i> | 6-24-17 |
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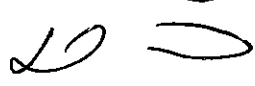
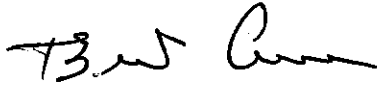
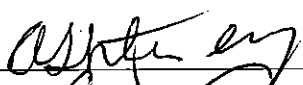

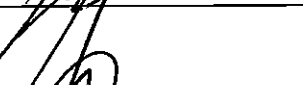

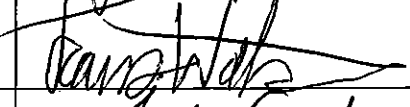

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

| | |
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| Petition summary and background | ASMFC has proposed Draft Amendment 1, which seeks to dramatically reduce the tautog harvest for the LIS region. It does so by prescribing regulations that make no distinction between party / charter boats and private boats, despite the fact that party / charter boats represent just 13.1% of the overall LIS tautog harvest. |
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| Printed Name | Signature | Date |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------|
| Donner Pollard III |  | 6/23/17 |
| Donner Pollard Jr |  | 6/24/17 |
| Steven Schmetzer |  | 6/24/17 |
|  | Nixon Smith | 6/24/17 |
|  | Dan Kraeme | 6/24/17 |
|  | CHRISTIAN FOSTER | 6/29/17 |
| St Germain, Peter |  | 6/24/17 |
| Crandall, Tat |  | 6/25/17 |
| John Turise |  | 6/25/17 |

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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| Printed Name | Signature | Date |
|---------------|--------------------------------------------------------------------------------------|---------|
| Mike Conroy |  | 6/24/17 |
| Don AKur |  | 6-24/17 |
| Bob CAPN |  | 6-24/17 |
| Ashton |  | 6-24/17 |
| Scott Barkel |  | 6/24/17 |
| Jeremy Barkel |  | 6/24/17 |
| Robin Watson |  | 6/24/17 |
| Travis Watson |  | 6/24/17 |
| Thomas MUSTIS |  | 6-24-17 |

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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| Printed Name | Signature | Date |
|---------------------|----------------------------|-----------|
| Candido Martinez | <i>Candido Martinez</i> | 6/26/2017 |
| MIKE TARTOR | <i>Mike Tartor</i> | 6/26/17 |
| VICTOR Tolentino | <i>Victor Tolentino</i> | 6/26/17 |
| Francisco Hernandez | <i>Francisco Hernandez</i> | 6/26/17 |
| Wilson Santiago | <i>Wilson Santiago</i> | 6/26/17 |
| Mason Moriarty | <i>Mason Moriarty</i> | 6-26-17 |
| NORMAN MORIARTY | <i>N. Moriarty</i> | 6/26/17 |
| LONNELL BEECHUM | <i>Lonnell Beechum</i> | 6-26-17 |
| Heather Harris | <i>Heather Harris</i> | 6-26-17 |







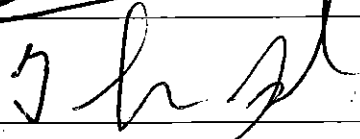
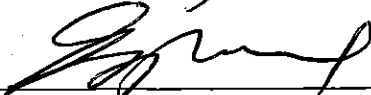

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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| Printed Name | Signature | Date |
|---------------------|---------------------|---------|
| Ronald W. Alexander | Ronald W. Alexander | |
| Lou Clayton | Lou Clayton | 6/26/17 |
| Willie Gant | Willie Gant | 6/26/17 |
| Vincent Graves | Vincent Graves | 6-26-17 |
| Philip Lawrence | Philip Lawrence | 6-26-17 |
| Jason Vee | Jason Vee | 6-26-17 |
| Fred Wall | Fred Wall | 6-26-17 |
| Ramon Perez | Ramon Perez | |
| TOMAS WRIGHT | Tomas Wright | 6-26-17 |

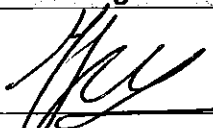
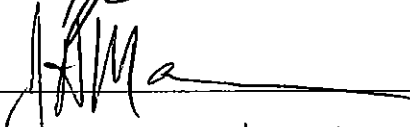


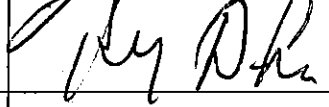

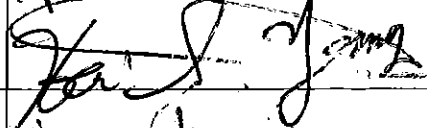
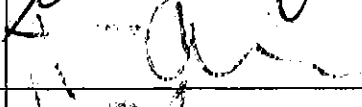

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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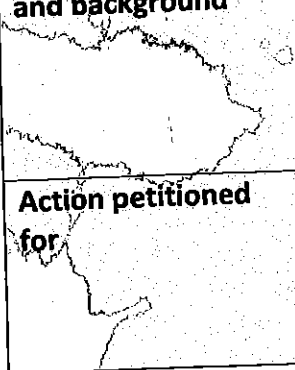
| Printed Name | Signature | Date |
|-------------------|--------------------------------------------------------------------------------------|----------|
| Todd Sanders |  | 06/29/17 |
| Barbara McQuilkin |  | 6/24/17 |
| Carol Dubourg |  | 6/24/17 |
| Michael Tyler |  | 6/24/17 |
| Adon Burrill |  | 6/24/17 |
| Jon Crane |  | 6/29/17 |
| Thomas Ashel |  | 6/24/17 |
| Gene Perreault |  | 6-24-17 |
| Matthew Mehar |  | 6/24/17 |




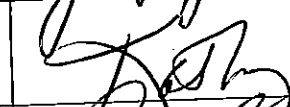

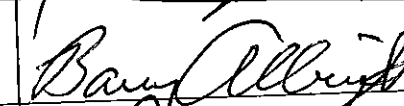
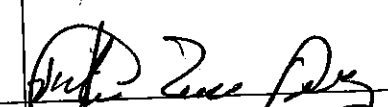

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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| Printed Name | Signature | Date |
|---------------|--------------------------------------------------------------------------------------|---------|
| ED LOPEZ |  | 6-23-17 |
| Joe Mancinone |  | 6-23-17 |
| BOB McNEILL |  | 6-23-17 |
| JOHN BROOKS |  | 6-23-17 |
| Henry DeLoce |  | 6-23-17 |
| HAROLD ALLEN |  | 6-23-17 |
| HAI S. YANG |  | 6-23-17 |
| Trisha Arena |  | 6-23-17 |
| Steve Dusko |  | 6-23-17 |

Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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| Printed Name | Signature | Date |
|------------------|--------------------------------------------------------------------------------------|-----------|
| Claude Adams |  | 6/21/17 |
| Glen Piette |  | 6/23/17 |
| Joe Albright |  | 6/23/17 |
| Kathy Dowd |  | 6/23/17 |
| Peter Lopez |  | 6/23/17 |
| Bary Albright |  | 6/23/17 |
| Robert Parson | Robert Parson | 6/23/17 |
| Victor Lane King |  | 6/23/2017 |
| Carlos Costa |  | 6/23/17 |


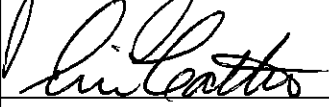

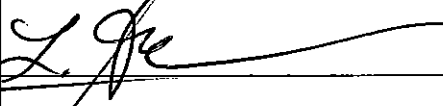
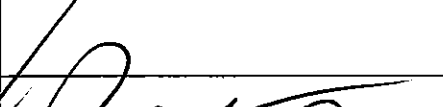
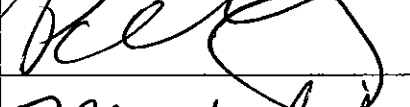
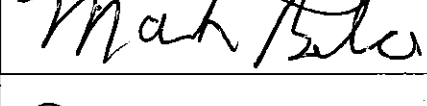
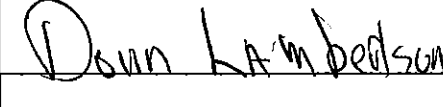
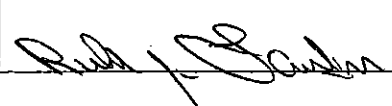
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| Printed Name | Signature | Date |
|-------------------------------|--------------------|---------|
| <i>Heidi M. Yu</i> | <i>[Signature]</i> | 6/22/17 |
| William W. Bullock | | |
| William Bullock | William Bullock | 6/22/17 |
| Christian Roman | <i>[Signature]</i> | 6/22/17 |
| BRIAN E BEARD | <i>[Signature]</i> | " |
| Timothy Buckley | <i>[Signature]</i> | 6/22/17 |
| DONALD DUNN | <i>[Signature]</i> | 6/22/17 |
| Tony Bruno | <i>[Signature]</i> | 6/22/17 |
| Joe Bells | <i>[Signature]</i> | 6/22/17 |


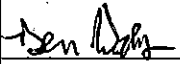
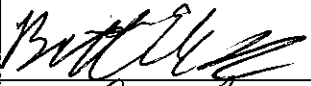
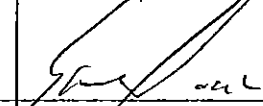
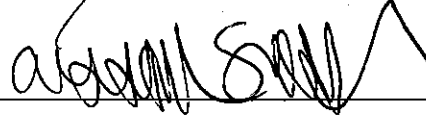


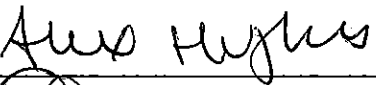
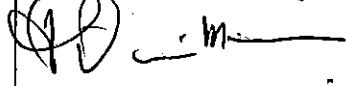
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| Printed Name | Signature | Date |
|------------------------|-------------------------------------------------------------------------------------------------|--------------------|
| JAMES JAMERSON |  | 6/22/17 |
| ERIC CATTLE |  | 6/22/17 |
| PAUL PASSAS |  | 6/22/17 |
| Eric Cattle |  | 6/22/17 |
| Paul Passas |  | 6-22-17 |
| Paul Chaplinsky |  | 6-22-17 |
| MARK BELINA |  | 6-22-17 |
| Don Lambertson |  | 6-22-17 |
| Richard Lambertson |  | 6-22-17 |

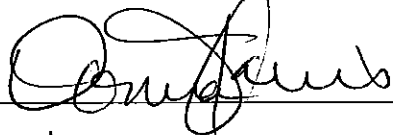
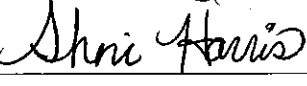
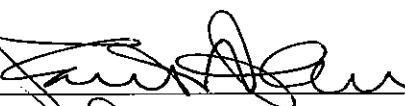
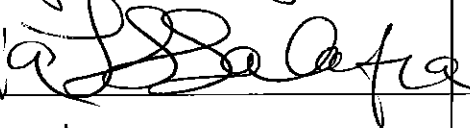
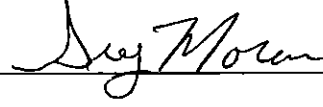
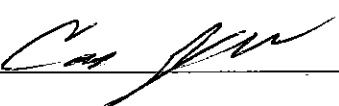
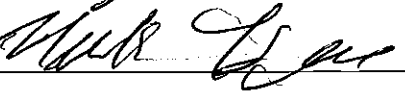


Petition to Revise Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog

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| Printed Name | Signature | Date |
|-------------------|--------------------------------------------------------------------------------------|---------|
| Matt Chamberlin |  | 6-21-17 |
| Ben Weeles |  | 6/21/17 |
| Brett Ellis |  | 6/21/17 |
| Ethan Cook |  | 6/21/17 |
| Austyn Salarina |  | 6/21/17 |
| Heidi Worthington |  | 6-21-17 |
| Randy Harris |  | 6-21-17 |
| Alex Hughes |  | 6/22/17 |
| Pamela Salarina |  | 6-22-17 |


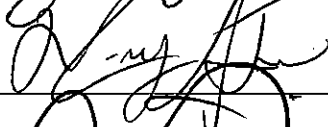


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| Printed Name | Signature | Date |
|---------------|--------------------------------------------------------------------------------------|---------|
| Donna Harris |  | 6/26/17 |
| Sheri Harris |  | 6/26/17 |
| Faith Allen |  | 6/26/17 |
| Laura Salafia |  | 6/26/17 |
| Greg Moran |  | 6-26-17 |
| Carl Jack |  | 6/26/17 |
| MAXIS H'CC |  | 6/28/17 |
| Rinoa Rivera |  | 6/28/17 |
| Greg Dubrule |  | 6/26/17 |

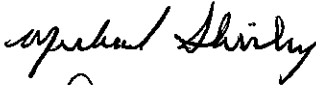
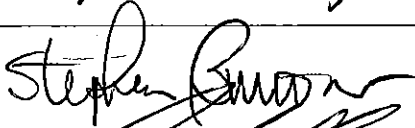
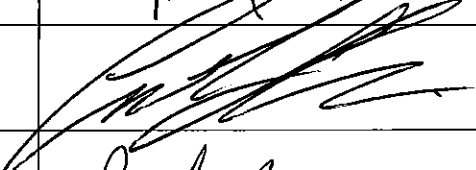

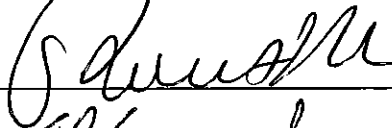
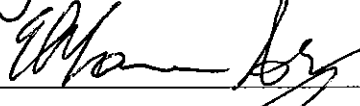

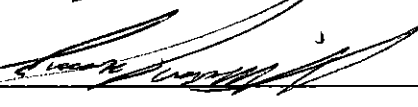

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|-------------------|--------------------------------------------------------------------------------------|---------|
| Bill Gannon |  | 6/26/17 |
| Henry Juca |  | 6/26/17 |
| Anthony Avitabile |  | 6/26/17 |
| Junq; Ding |  | 6/26/17 |
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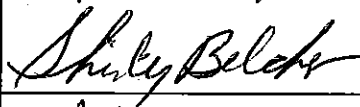

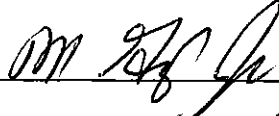

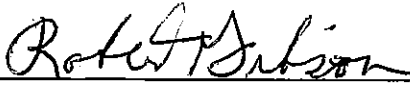
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|-------------------|--------------------------------------------------------------------------------------|---------|
| MICHAEL SHIALEY |  | 6-26-17 |
| Stephen Burrow |  | 6-26-17 |
| Amanda Carneiro |  | 6/26/17 |
| Paul Brockman |  | 6/26/17 |
| Robert Ash |  | 6/26/17 |
| Ethan Ash |  | 6/26/17 |
| Jeffrey Rigoletti |  | 6-27-17 |
| James Rigoletti |  | 6-27-17 |
| Jeremy Gannon |  | 6/26/17 |




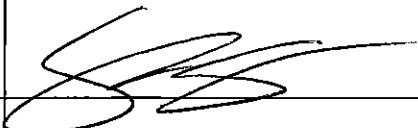


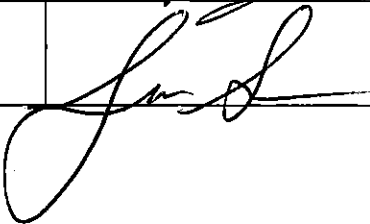
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| Printed Name | Signature | Date |
|-----------------|--------------------------------------------------------------------------------------|----------|
| JOHN MACKIEWICZ |  | 06/26/17 |
| Lewis A Rawles |  | 06/25/17 |
| Shirley Belcher |  | 06/26/17 |
| JEFF ARSON |  | 6/26/17 |
| MIKE GRIP JR |  | 6/26/17 |
| JERRY THIBODEAU |  | 6/26/17 |
| ROBERT GIBSON |  | 6/26/17 |
| | | |
| | | |


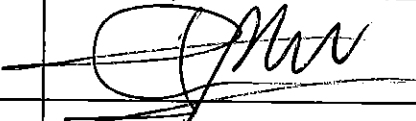
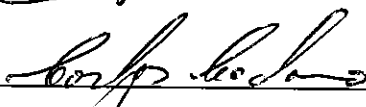
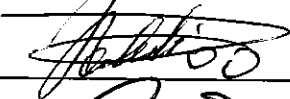

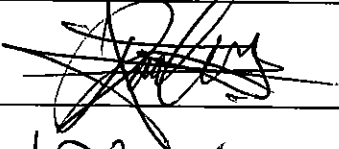
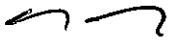
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| Printed Name | Signature | Date |
|-----------------|--------------------------------------------------------------------------------------|----------|
| William Stankus |  | 6-25-17 |
| Jamey Velozes |  | 6-25-17 |
| Seth Megargle |  | 06/25/17 |
| Joe Devine | JOE DEVINE | 06/25/17 |
| SEAN SMITH |  | 06/25/17 |
| Parker Clark | Parker Clark | 6/25/17 |
| Jim Engelmann |  | 6-25-17 |
| Ryan Botseas |  | 6-25-17 |
| Jim Smith |  | 6-25-17 |

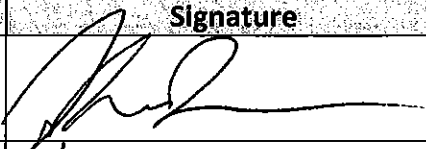
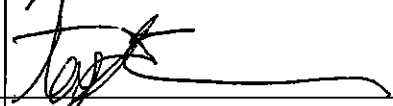

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| Printed Name | Signature | Date |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------|
| Mike Salkauskas |  | 6/25/17 |
| Diego Lozada |  | 6/25/17 |
| Carlos Lozano |  | 6/25/17 |
| Prokudio Lopez |  | 6/25/17 |
| Roger Salinas |  | 6/25/17 |
| Rene Coronel |  | 6/25/17 |
| V Palaski | V Palaski | 6/25/17 |
| h FL | Anthony Salek | 6/25/17 |
|  | Raymond Qian | 6-25-17 |

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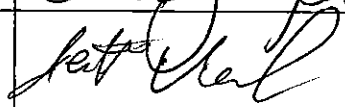


| Printed Name | Signature | Date |
|-------------------|--------------------------------------------------------------------------------------|------|
| Luke Wiggins |  | 7/20 |
| Taylor Vallas |  | 7/20 |
| Albert Bove |  | 7/20 |
| FRANCIS BOVE | Francis Bove | 7/20 |
| EDWARD PUNZALAN | Ed Punzalan | 7/20 |
| Melissa Wiggins | Melissa Wiggins | 7/20 |
| Michelle Punzalan | Michelle Punzalan | 7/20 |
| Samantha Boxley | Samantha Boxley | 7/20 |
| Marlene Wiggins | Marlene Wiggins | 7/20 |

2

| Printed Name | Signature | Date |
|------------------|------------------|------|
| Meghan Grabowski | Meghan Grabowski | 7/20 |
| Richard Franklin | Rick Franklin | 7/20 |
| Sam Punzalan | Sam Punzalan | 7/20 |
| NIKKI COOK | NIKKI COOK | 7/20 |
| Allie Gilbert | Allie Gilbert | 7/20 |
| Oean Gilbert | Oean Gilbert | 7/20 |
| Roxanne Punzalan | Roxanne Punzalan | 7/20 |
| Rebecca Taylor | Rebecca Taylor | 7/20 |
| Zach Scovish | Zach Scovish | 7/20 |
| Sarah Labreque | Sarah Labreque | 7/20 |
| Cattyn Hughes | Cattyn Hughes | 7/20 |
| Peter Lighten | Peter Lighten | 7/20 |
| Erin Hughes | Erin Hughes | 7/20 |

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| Printed Name | Signature | Date |
|-------------------|--------------------------------------------------------------------------------------|-----------|
| JOSEPH A. WYSOCKI |  | 6-26-2017 |
| KAREN J. WYSOCKI |  | 6-26-2017 |
| JEFF VIOLA |  | 6-26-17 |
| Boent nosta |  | 6-26-17 |
| Hunter Crumer |  | 6-26-17 |
| | | |
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| | | |

This form letter was also submitted by Captains Jay Salvatore, Pete Joram and Preston Glass.

Black Hawk

Captain Greg Dubrule
PO Box 46
Niantic, CT 06357
860-448-3662
BlackHawkFishing@gmail.com



June 21, 2017

Ashton Harp
Fishery Management Plan Coordinator
1050 North Highland St, Suite 200 A-N
Arlington, VA 22201

Via email: aharp@asmfc.org

Re: Tautog Draft Amendment 1

Dear Ashton,

After careful review of Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog, I write to offer the following comments as a longtime charter & party boat owner and operator in the Long Island Sound region. The charter and party boat community shares with ASMFC a vested interest in ensuring a healthy tautog stock that can be harvested in a sustainable manner. I offer these comments in the hope that ASMFC will make essential changes to the Draft Amendment – changes that will protect the fishery and our industry in equal measure.

As currently envisioned by ASMFC, the Draft Amendment seeks to reduce the commercial and recreational harvest for the LIS region by a minimum of 47.2%. It does so by prescribing recreational regulations that make no distinction between party / charter boats and private boats, ignoring the fact that for the last three years, the former has accounted for just over one-tenth of total LIS tautog landings. During that time, charter and party boats represented only 11.5% of the Connecticut tautog harvest, and 13.1% of the combined Connecticut and New York harvest by numbers of fish.¹ To regulate party / charter boats and private boats in the same way is to disregard the disparate impact each has on the fishery. That approach is ineffectual to the extent that it imposes drastic cuts on a group that is responsible for just a fraction of the overall harvest. Such cuts further fail to consider not just the thousands of jobs created and supported by the industry, but also the dollars we and our customers inject into local economies.

Over the past few decades the charter and party boat industry has felt the effects of an unrelenting progression of ever-tightening regulations. Reductions to every key fishery – striped bass down to 1 fish per person, fluke to 3 fish per person, and continuing cuts to seabass – have left our industry reeling. The shock wave of those regulations continues to reverberate throughout the LIS region.

¹ From 2014 – 2016, party and charter boats made up 11.5% of the Connecticut tautog harvest by numbers of fish. Shore fishermen accounted for roughly 1% and private boats were responsible for the balance, roughly 87.5% of the harvest. The breakdown by fishing mode is very similar for New York. Source: personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, June 13, 2017.

This form letter was also submitted by Captains Jay Salvatore, Pete Joram and Preston Glass.

Tautog regulations in particular have evolved from 25 fish at 12" to 10 fish at 14" to 4 fish at 14", then 15", and finally to 4 fish at 16". Four fish per person leaves us with the bare minimum for a viable trip that has a hope of enticing customers. Allowing fewer than 4 fish per person will all but end blackfishing for charter and party boats. Losing those trips would shorten the 25-week prime of our season by 6 weeks – a reduction of nearly 25%. By doing so, Draft Amendment 1 will cripple a group that accounts for only 13.1% of total LIS tautog landings.

We implore ASMFC to craft tautog regulations that treat charter and party boats as distinct from private boats. Rhode Island has done so for several years to great success.

Of course all parties with a stake in the continued health of the tautog fishery must contribute to the overall reduction of the harvest and we certainly do not consider ourselves immune from the required cuts.

We propose the following changes to the current management measures for charter and party boats in the LIS region:

1. Eliminate the spring (April 1 – April 30) and summer (July 1 – August 31) open seasons in Connecticut;
2. Shorten the open fall season to October 12 – December 1 for Connecticut and New York; and
3. Impose a possession limit of 4 fish and a slot limit of fish from 16" to 22" to protect large egg-bearing females.

We appreciate ASMFC's effort to solicit public comments regarding Draft Amendment 1 to the Interstate Fishery Management Plan for Tautog. Please consider revising the Draft Amendment to include regulations for charter and party boats that recognize the contributions we make to our communities and the relatively small impact we have on the tautog fishery.

Sincerely,

Greg Dubrule

Captain Greg Dubrule
Black Hawk, Niantic, Connecticut

CC. David Simpson
Director, CT DEEP Marine Fisheries Division
Via email david.simpson@ct.gov

This comment was also submitted by Peter Grillo and Rob Usinger.

From: Michael Friedman [mailto:mifriedmans@gmail.com]

Sent: Wednesday, June 28, 2017 2:12 PM

To: Ashton Harp <aharp@asmfc.org>

Subject: Tog draft amendment

Dear Mr. Harp, concerning the recent hearing on June 20th, please indulge my views. The blackfishery is in a terrible state and the most stringent measures should be undertaken to rehabilitate the fishery. In the past my friends and I would do one or two charters a year for blackfish. Last year after 2 charters it was clear the fishery has been decimated. We fish out of Long Island but can no longer justify the charters, as the fish are not there. This fish grows slow. Close the crazy commercial pot fishery and please consider at least a temporary closure of the recreational fishery. I'd like my children to at least see a tog some day. Your attention is greatly appreciated.

Regards,

Michael Friedman

TAUTOG: Summary of Management Options in Draft Amendment 1

2.2 Goals (pg. 48-49)

Option A. Status Quo. Maintain the 1996 Goals

Option B. Revised Goal Statement

2.3 Objectives (pg. 49-51)

Option A. Status Quo: Maintain the 1996 Objectives

Options B-H: Modified Objectives

2.5 Biological Reference Points (pg. 53-54)

Option A. Status Quo - Reference Points can be modified via a Management Document

Option B. Reference Points can be modified via Board Action (i.e., Management Document Not Required)

2.7.1 Fishing Mortality (F) Target (pg. 54-55)

Option A. Status Quo

Option B. Managing to the Regional F Target

Sub-Option B1: No Time Requirement

Sub-Option B2: Board Action within One Year

Sub-Option B3: Board Action within Two Years

Probability of Achieving F Target (pg. 55)

Option A. Status Quo

Option B. 50% Probability of Achieving F Target

Option C. 70% Probability of Achieving F Target

2.7.2 F Reduction Schedule (pg. 55-56)

Option A: Status Quo

Option B: Three Years

Option C: Five Years

2.7.4 Stock Rebuilding Schedule (pg. 56)

Option A: Status Quo

Option B. A Stock Rebuilding Schedule can be developed via an Addendum

Option C. A Stock Rebuilding Schedule can be developed via an Addendum, Not to Exceed 10 Years

4.0 Management Program Implementation

4.1 Regional Boundaries (pg. 65-66)

Option A. Status Quo – Coastwide Management

Option B. Regional Management (Four Regions)

Long Island Sound Boundaries (pg. 69)

Sub-Option B1: LIS Boundaries, Montauk Point, NY to Watch Hill, RI

Sub-Option B2: LIS Boundaries, Orient, NY to Watch Hill, RI

4.2.2 MASSACHUSETTS-RHODE ISLAND (starting on pg. 72)

4.2.2.1 MARI Recreational Management Measures (pg. 73)

Option A. Status Quo

Option B. All measures consistent (16", 3 & 4 fish)

Option C. All measures consistent (16", 3 fish)

4.2.3 LONG ISLAND SOUND (starting on pg. 74)

4.2.3.1 LIS Recreational Management Measures (pg. 75-76)

50% Probability of Achieving F Target (47.2% or more harvest reduction)

Option A1. Status Quo; state-specific reduction

Option B1. Consistent Minimum Size (16") and Possession Limit (1)

Option B2. Consistent Minimum Size (17") and Possession Limit (2)

Option B3. All Measures Consistent (16", 1 fish)

70% Probability of Achieving F Target (52.6% or more harvest reduction)

Option A2. Status Quo; state-specific reduction

Option B4. Consistent Minimum Size (16") and Possession Limit (1)

Option B5. Consistent Minimum Size (17") and Possession Limit (3 & 1 fish)

Option B6. All Measures Consistent (16.5", 1 fish)

4.2.3.2 LIS Commercial Management Measures (pg. 77-78)

50% Probability of Achieving F Target (47.2% or more harvest reduction)

Option A1. Status Quo

Option B1. Regional Quota

70% Probability of Achieving F Target (52.6% or more harvest reduction)

Option A2. Status Quo

Option B2. Consistent Minimum Size (16")

Option B3. Commercial Quotas

4.2.3.3 LIS Slot Limit for the recreational and commercial fisheries (pg. 78-79)

Option C. 16-18" Slot Limit

4.2.4 NEW JERSEY - NEW YORK BIGHT (starting on pg. 80)

4.2.4.1 NJ-NYB Recreational Management Measures (pg. 81-82)

50% Probability of Achieving F Target (2% or more harvest reduction)

Option A1. Status Quo

Option B1. Consistent Minimum Size (15") and Possession Limit (4)

Option B2. Consistent Minimum Size (16")

C1. Slot Limit (15-18") with Consistent Possession Limits (4)

70% Probability of Achieving F Target (11% or more harvest reduction)

Option A2. Status Quo

Option B3. Consistent Minimum Size (15") and Possession Limit (3)

Option B4. Consistent Minimum Size (16") and Possession Limit (4)

Option B5. All Measures Consistent

Option C2: Slot Limit (15-18") with Consistent Possession Limits (4)

Option C3: Slot Limit (15-18") with All Measures Consistent

4.2.4.2 NJ-NYB Commercial Management Measures (pg. 83-84)

50% Probability of Achieving F Target (2% or more harvest reduction)

Option A1. Status Quo

Option B1. Consistent Minimum Size (15")

Option B2. Consistent Minimum Size (16")

Option B3. Commercial Quotas

Option C4: Slot Limit (15-18")

70% Probability of Achieving F Target (11% or more harvest reduction)

Option A2. Status Quo

Option B4. Consistent Minimum Size (15")

Option B5. Consistent Minimum Size (16")

Option B6. Commercial Quotas

Option C5: Slot Limit (15-18")

4.2.5 DELAWARE - MARYLAND – VIRGINIA (starting on pg. 84)

4.2.5.1. DelMarVa Recreational Management Measures (pg. 86)

Option A. Status Quo

Option B. Consistent Possession Limit (4) and Seasons

Option C. Consistent Minimum Size (16")

Option D. All Measures Consistent (16" and 4 fish)

4.2.5.2 DelMarVa Commercial Management Measures (pg. 86)

Option A. Status Quo

Option B. Adopt recreational measures as commercial measures for DE and MD

4.3 Commercial Quota (pg. 87-88)

Option A. Status Quo

Option B. Commercial Quota Procedures

4.4 Commercial Harvest Tagging Program (pg. 88-91)

Option A. Status Quo

Option B. Implement a Commercial Harvest Tagging Program

4.4.3 Tag Application (pg. 89-90)

Option A. Harvester Application at Harvest or Upon Landing

Option B. Application by Dealer

4.6 Spawning Closures (pg. 91)

Option A. Status Quo

Option B. Regional Spawning Closures

4.11.2 Management Program Equivalency (pg. 93)

Option A. Any management measures can be adjusted under Conservation Equivalency

Option B. Any management measures, except the spawning closures, can be adjusted under Conservation Equivalency