



## Mid-Atlantic Fishery Management Council

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# MEMORANDUM

**Date:** September 13, 2021  
**To:** Scientific and Statistical Committee  
**From:** Julia Beaty, staff  
**Subject:** Recent process for setting recreational bag, size, and season limits for summer flounder, scup, black sea bass, and bluefish

## 1. Introduction

On September 20, 2021, a sub-group of the Mid-Atlantic Fisheries Management Council's (Council's) Scientific and Statistical Committee (SSC) will review two recreational fishery models which may be used to develop recreational bag, size, and season limits (also referred to as recreational measures) for summer flounder, scup, black sea bass, and bluefish. These models may be used through the [Recreational Harvest Control Rule Framework/Addendum](#), or for other purposes. This memorandum briefly summarizes methods used in recent years to set recreational measures for these four species to assist the SSC in considering how the two models under review differ from the current process.

## 2. Summary of Current Process

Under the current process, methods used to adjust measures can vary but generally use Marine Recreational Information Program (MRIP) harvest data from one or more recent years to predict the impacts of changes in bag, size, or season limits on harvest. Although there are some differences in how measures are set for state and federal waters, the same general process and assumptions are used to set measures in both federal and state waters. Specific examples of recent methods are provided in later sections of this document.

Under current regulations for these species, the Council must set recreational management measures that are expected to prevent Annual Catch Limit (ACL) overages. In practice, the measures are set based on expected harvest compared to the Recreational Harvest Limit (RHL). By aiming to prevent RHL overages, this method also aims to prevent ACL overages, and therefore overages of the acceptable biological catch limit (ABC). The RHL accounts for harvest only and is equal to the ACL minus expected dead discards. If expected dead discards are accurately predicted, then preventing RHL overages should also prevent ACL overages. However, it is challenging to accurately predict recreational harvest and discards under any combination of measures. Harvest and discards are impacted by many factors, including regulations, weather, availability of multiple species, economic trends, and other factors. MRIP data often show considerable variations in harvest across years when the measures remain unchanged (Table 1).

The process used to set measures in recent years generally does not account for expected differences in availability or other factors in the upcoming year compared to previous years

beyond assumptions accounted for when setting the RHL (e.g., assumptions about future recruitment are made when calculating the ABC from which the RHL is derived). This is a frequent point of discussion among the Monitoring Committees; however, an appropriate method to address this shortcoming has not been developed and adopted.

The federal regulations and Fishery Management Plans allow the federal waters recreational measures for summer flounder and black sea bass to be waived in favor of the measures in the state where anglers land their catch. This is not allowed for scup or bluefish. This process has been used for summer flounder since 2002. It has been allowed for black sea bass since 2020, though it has not been used to date. This process relies on the same assumptions described above. Specifically, for the federal waters measures to be waived, it must be demonstrated that state waters measures are collectively expected to prevent harvest from exceeding the RHL and this analysis is based on recent MRIP data.

Through the Atlantic States Marine Fisheries Commission's (Commission's) conservation equivalency process, states have the option to modify their management measures as long as the measures are deemed to be conservationally equivalent to those which would otherwise be implemented. The methods for determining if measures are conservationally equivalent can vary; however, they usually rely on trends shown in MRIP data in one or more previous years to demonstrate that the modified measures will result in the same level of harvest as the measures which would otherwise be implemented.

States always have the option of setting more restrictive measures than the federal waters measures. This approach can be used to constrain harvest in states with a higher abundance of the species in question. For example, for several years, the state waters measures have been more restrictive than the federal waters measures for black sea bass in Massachusetts through New Jersey and for scup in Massachusetts through New York compared to the other states in the management units.

### **3. Examples of Recent Methods**

Under the current Fishery Management Plans and federal regulations, the Monitoring Committees have considerable flexibility in how they develop recommended recreational management measures for these species. This section summarizes specific examples of the methods that have been used in recent years. The Monitoring Committees are not required to follow these specific methods and can use different methods based on their expert judgement.

#### **3.1. Step 1: Calculate Expected Harvest Under Status Quo Measures**

For all four species, the Monitoring Committees typically use one of the two methods summarized below to first make an assumption about harvest in the upcoming year under status quo measures. They then compare that value to the upcoming year's RHL. If the expected harvest value is close to the RHL, then the Monitoring Committees typically recommend no change in management measures. They usually recommended against changing management measures when expected harvest is within a reasonably small range above and below the RHL to acknowledge that expected future harvest under status quo measures cannot be accurately predicted with a high degree of confidence. The Monitoring Committees have not pre-defined the range above and below the RHL which would support no change in measures, but they often rely on the coastwide<sup>1</sup> percent standard error (PSE) value from one or more recent years to make

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<sup>1</sup> For these species, the term "coastwide" is commonly used to refer to the entire management unit (i.e., Maine through North Carolina for summer flounder and scup, Maine through Cape Hatteras for black sea bass, and Maine through the east coast of Florida for bluefish).

this determination (e.g., if the coastwide PSE is around 10% and the expected harvest to RHL comparison suggested that harvest could be liberalized by 7%, then the Monitoring Committee would typically recommend no changes in measures). Section 3.2 summarizes methods used to adjust the measures if it is determined that a change is needed.

### **3.1.1. Multi-Year Average of Past Harvest**

Through 2019, Bluefish Monitoring Committee typically assumed that the following year's harvest under status quo measures would be similar to a recent multiple year average of MRIP harvest estimates. This multi-year average did not include preliminary current year data.

For many years, a comparison of the recent multi-year average of past harvest to the upcoming RHL suggested that no changes were needed to the bluefish measures in state or federal waters. These measures remained unchanged for many years prior to 2020 and RHL overages were rare (e.g., only one RHL overage during 2009-2018). For the 2020 fishing year, the bluefish measures were modified in an attempt to reduce harvest by about 29% using general methodology described in section 3.2.

### **3.1.2. Projected Current Year Harvest**

For several years, the Summer Flounder, Scup, and Black Sea Bass Monitoring Committee has used preliminary current year wave 1-4 harvest data to project harvest for the entire current year by assuming the same proportion of harvest by wave as in the previous year or multiple previous years. This formed the basis for the assumption about next year's harvest under status quo measures. This approach was used, rather than a multi-year average of past harvest as described above for bluefish, because the measures for summer flounder, scup, and black sea bass changed more frequently and harvest approached or exceeded the RHL more often than for bluefish.

In some cases, a single recent year of proportions of harvest by wave was used because it was assumed that harvest from earlier years would not be a good predictor of current year harvest due to changes in management measures. In most cases, these projections were done at the state level and then combined to produce a coastwide projected harvest estimate (e.g., Table 2). This allowed the Monitoring Committee to assess if the estimates for any states seemed much higher or lower than expected based on past trends and current management measures. In some cases, the Monitoring Committee recommended adjustments to the projected values for individual states to address these concerns. In other cases, the Monitoring Committee agreed that projections at the coastwide level, rather than state by state, were more appropriate.

Preliminary MRIP estimates by wave are generally made available about 45 days after the wave ends. The Summer Flounder, Scup, and Black Sea Bass Monitoring Committee typically recommends recreational measures in November of the prior year to allow for consideration of preliminary data through wave 4. Adjustments to state waters measures through the Commission process are sometimes able to consider preliminary wave 5 data in February. Final MRIP data are typically not available until April; therefore, final estimates for the previous year generally cannot be used to set measures in the current year.

## **3.2. Step 2: If Changes Are Needed, Use Trends Shown in Previous Years' MRIP Data to Achieve Desired Overall Percent Liberalization or Reduction in Harvest**

If the expected harvest to RHL comparison described above suggested an RHL overage or underage beyond the scale of recent PSEs, then the Monitoring Committees typically recommended an overall percentage reduction or liberalization in harvest that should be achieved by the combination of state and federal waters measures. They also recommended specific federal waters measures to achieve the agreed upon percentage change in federal waters. The

states would then work through the Commission process to collectively achieve the desired percentage reduction or liberalization in harvest from state waters.

As described above, the desired overall percentage change (if any) for summer flounder, scup, and black sea bass was calculated using preliminary wave 1-4 current year data. The process for setting state waters measures often occurred after preliminary wave 5 data became available. The desired percentage change was sometimes modified if this information suggested a different projected current year harvest value than the earlier calculations using preliminary data through wave 4. This has not occurred for bluefish because, as described above, the bluefish process to date has not used preliminary current year data.

When recommending specific changes in measures for these four species, the Monitoring Committee relied on the same general assumptions outlined above, specifically, that recent trends in harvest could be used to predict next year's harvest under different management measures. For example, it was assumed that if the open season were reduced by two weeks (or  $\frac{1}{4}$  of a wave), then harvest in that wave would decrease by 25%. In a similar way, if the MRIP data showed that 30% of harvested fish were within one inch of the current minimum size, a one inch increase in the minimum size would decrease harvest by 30%. Changes to bag limits were more complicated but usually considered the number of trips achieving the current bag limit and assumed that all those trips would take the modified bag limit. Non-compliant harvest (e.g., trips that exceeded the bag limit or kept fish below the minimum size at the time) were retained in the calculations if any changes in management measures would result in those trips remaining non-compliant.

In some instances, other data sources were used to help estimate percent change in harvest associated with changes to size and bag limits, most frequently volunteer angler survey data.

The Monitoring Committee acknowledged that these calculations require major assumptions about fishing behavior (e.g., fishing effort would not notably increase in other times of year to offset a longer seasonal closure); however, they did not have data available to predict how behavior would change under any changes in management measures.

Table 3 includes comparisons to allow for a rough approximation of how well the implemented changes in measures achieved the desired percentage change in harvest for summer flounder, scup, and black sea bass for the 2015-2019 fishing years. This comparison suggests that the implemented measures were not always successful in achieving the desired percentage change in harvest (though some complicating circumstances are noted in the footnotes for Table 3). For example, the actual percent change in harvest differed from the desired percent change by at least 20% in 3 out of these 5 years for black sea bass, 2 out of 5 years for summer flounder, and one out of these 5 years for scup.

### **3.2.1. Determining Which Measures to Change**

When a change in measures is needed, the Monitoring Committees consider which measures to modify by evaluating which measures have the greatest impact on harvest and which changes are likely to be viewed as somewhat equitable in their impacts across states and fishing modes. For example, if only a small percentage of recent trips have taken the full bag limit, then a drastic change may be needed to impact harvest based on a bag limit change alone. For summer flounder, scup, and black sea bass, relatively small changes in the current minimum size limits could result in notable changes in overall harvest due to the size distribution of fish caught. However, size limit changes can have disproportionate impacts on anglers fishing from shore, who typically have access to smaller fish than anglers fishing from private or for-hire vessels.

Changes in open and closed seasons can also have different impacts by state, especially for highly migratory species like bluefish which can have notable differences in seasonal availability across states. The Monitoring Committees attempt to balance these and other considerations when recommending specific changes to the bag, size, and season limits.

### 3.2.2. Accounting for Changes in More than one Measure

In some cases, changes to more than one measure (size, season, and/or bag) were considered by the Monitoring Committees or the Commission’s Technical Committees. When developing measures to achieve a desired percentage liberalization or reduction in harvest, the interaction between two or more measures was considered because changes weren’t strictly additive. The Technical Committee used what they called an interaction term when calculating the total change in harvest due to modifying multiple measures:  $(x+y)-(x*y)$ , where  $x$  is the percent change associated with a change in one measure and  $y$  is the percent change associated with a change in a different measure. For example, if a one inch increase in the minimum size is expected to reduce harvest by 40% and an additional three week closure is expected to reduce harvest by 20%, then these two changes taken together would be expected to reduce harvest by 52%. This was strictly a mathematical consideration as information on how angler behavior may change as a result of these new measures was not available.

### 3.2.3. Use of MRIP data to adjust measures at the State, Wave, and Mode level

When setting recreational management measures, the Monitoring Committees usually focused on comparisons of expected coastwide harvest to the RHL for the following year. When considering state waters measures, the Commission’s Technical Committee often operated at a much finer scale in pursuit of greater flexibility and avoiding the differential impacts to states of coastwide measures, using MRIP to adjust measures at the state, wave, and mode level; potentially exasperating the disconnect between the prior years’ harvest and the next year’s projected harvest.

## 4. Tables

**Table 1:** Recent MRIP harvest estimates (in millions of pounds, based on the revised/calibrated time series of estimates; ME-NC for summer flounder and scup, ME - Cape Hatteras for black sea bass, and ME-FL for bluefish) and associated PSE values (ME-VA for summer flounder, scup, and black sea bass and ME-FL for bluefish). Examples of years with status quo measures across state and federal waters (or measures intended to produce status quo levels of harvest) are indicated in bold.

Year	Summer flounder		Scup		Black sea bass		Bluefish	
	Harvest	PSE	Harvest	PSE	Harvest	PSE	Harvest	PSE
2011	13.48	8.1	10.32	16.7	3.27	15	<b>34.22</b>	<b>8.7</b>
2012	16.13	8.6	8.27	12.3	7.04	13.5	<b>32.53</b>	<b>8.3</b>
2013	19.41	9.8	12.64	13.6	5.68	13.8	<b>34.4</b>	<b>7.6</b>
2014	<b>16.23</b>	<b>9.8</b>	10.27	13.8	6.93	14.2	<b>27.04</b>	<b>10.5</b>
2015	<b>11.83</b>	<b>7.8</b>	12.17	16	7.82	11.3	<b>30.1</b>	<b>8.5</b>
2016	<b>13.24</b>	<b>10.8</b>	10	12.7	12.05	12.4	<b>24.16</b>	<b>12.3</b>
2017	10.09	13.4	13.53	13.7	11.5	19.4	<b>32.07</b>	<b>16.9</b>
2018	7.6	8.5	12.98	11	<b>7.92</b>	<b>8.1</b>	<b>13.27</b>	<b>14.7</b>
2019	7.8	9.6	<b>14.12</b>	<b>8.8</b>	<b>8.61</b>	<b>7.9</b>	<b>15.56</b>	<b>8.7</b>
2020	10.06	13.9	<b>12.91</b>	<b>8.8</b>	<b>9.05</b>	<b>8</b>	13.58	16.2

**Table 2:** 2019 black sea bass harvest projections by state in pounds. All projections were based on preliminary 2019 wave 1-4 estimates and the proportion of harvest by wave and state in 2018. All values are based on the revised/calibrated MRIP data. Virginia and North Carolina harvest in 2018 and 2019 was adjusted to account for February harvest not sampled by MRIP.

State	2018 w1-4 as % of annual harvest	2019 w1-4 harvest	2019 projected w1-6 harvest	Final estimated 2019 w1-6 harvest
ME	N/A	0	0	0
NH	N/A	0	0	0
MA	95%	1,203,200	1,264,469	1,361,110
RI	48%	602,352	1,243,050	1,225,058
CT	76%	620,517	820,038	1,180,400
NY	50%	1,315,315	2,651,282	3,126,473
NJ	75%	853,298	1,131,593	1,117,658
DE	37%	26,501	72,386	61,974
MD	11%	79,918	705,083	156,986
VA	63%	171,585	270,654	371,523
NC <sup>a</sup>	44%	3,700	8,467	11,638
<b>Total</b>	<b>67%</b>	<b>4,876,386</b>	<b>8,167,024</b>	<b>8,612,820</b>

<sup>a</sup>Through Cape Hatteras

**Table 3:** Desired percent change in harvest compared to the previous year based on the recommendations of the Council and the Board. This percent change did not always match the Monitoring Committee’s recommendation, and the percent change used by states to adjust their measures through the Commission process may have varied based on consideration of preliminary wave 5 data not available during the joint Council/Board meeting. The actual percent change in harvest compared to the previous year (based on pre-calibration MRIP units except where noted below) and the difference between the desired and actual percent change are also provided.

Year	Summer flounder		Scup		Black sea bass	
	Desired % change	Actual % change	Desired % change	Actual % change	Desired % change	Actual % change
2015	0%	-36%	<sup>a</sup>	0%	-28%	+3%
2016	0%	+31%	0%	-3%	-16%	+37%
2017	-41%	-48%	0%	+27%	0%	-20%
2018	+17%	+5%	0%	+4%	0%	-8%
2019 <sup>b</sup>	0%	+3%	0%	-4%	0%	-9%

<sup>a</sup>The 2014 projected harvest to 2015 RHL comparison suggested that harvest could be increased by 44%. The Monitoring Committee recommended no change in measures given that the existing measures were not considered overly restrictive and a benchmark assessment was planned for the following year. The Council and Board increased the federal waters possession limit from 30 to 50 fish, leaving the season and minimum fish size unchanged. This was not based on a desired percentage liberalization.

<sup>b</sup>Pre-calibration estimates for 2019 were not generated by the MRIP program for any species. GARFO staff used an alternative method to convert calibrated 2019 estimates to pre-calibration units for scup and black sea bass for the purposes of year end catch accounting. This was not needed for summer flounder for 2019 as the summer flounder specifications for 2019 accounted for the revised/calibrated MRIP data. Therefore, the 2019 comparison shown here for summer flounder is based on a comparison of 2018 to 2019 in calibrated MRIP units. All other comparisons are based on pre-calibrated MRIP as those units were the basis for management measures in those years.