# Atlantic States Marine Fisheries Commission

## Summer Flounder, Scup, and Black Sea Bass Management Board

*February 1, 2021*
*9:30 –10:00 a.m.*
*and*
*12:45 – 4:30 p.m.*
*Webinar*

## Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

| | | |
|---|---|---|
| 1. | Welcome/Call to Order *(A. Nowalsky*) | 9:30 a.m. |
| 2. | Board Consent<br>• Approval of Agenda<br>• Approval of Proceedings from August 2020 | 9:30 a.m. |
| 3. | Public Comment | 9:35 a.m. |
| 4. | 2021 Recreational Management Measures for Summer Flounder, Scup, and Black Sea Bass (*D. Colson Leaning/S. Lewis)* **Board Action Only**<br>• Consider State Proposals for Adjusting 2021 Recreational Measures **Possible Action**<br>• Consider Virginia Proposal for Wave 1 recreational Black Sea Bass Fishery **Final Action** | 9:45 a.m. |
| 5. | Recess | 10:00 a.m. |
| 6. | Reconvene as a Joint Meeting with Mid-Atlantic Fishery Management Council | 12:45 p.m. |
| 7. | Consider Addendum XXXIII and Council Amendment on Black Sea Bass Commercial State Allocations for Final Approval (*S. Lewis/C. Starks)* **Final Action** | 12:45 p.m. |
| 8. | Other Business/Adjourn | 4:30 p.m. |

This meeting will be held via webinar, click here for details.

# MEETING OVERVIEW

**ASMFC Summer Flounder, Scup, and Black Sea Bass Management Board**
**February 1, 2021**
**9:30 – 10:00 a.m.**
**and**
**12:45 – 4:30 p.m.**
**Webinar**

| | | |
|---|---|---|
| Chair: Adam Nowalsky (NJ)<br>Assumed Chairmanship: 12/19 | Technical Committee Chair:<br>Greg Wojcik (CT) | Law Enforcement Committee Representative: Jason Snellbaker (MD) |
| Vice Chair:<br>Justin Davis (CT) | Advisory Panel Chair:<br>Vacant | Previous Board Meeting:<br>August 6, 2020 |
| Voting Members: MA, RI, CT, NY, NJ, DE, MD, PRFC, VA, NC, NMFS, USFWS (12 votes) | | |

**1. Board Consent**

- Approval of Agenda
- Approval of Proceedings from August 2020

**2. Public Comment –** At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time should use the webinar raise your hand function and the Board Chair will let you know when to speak. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance, the Board Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

**3. 2021 Recreational Management Measures for Summer Flounder, Scup, and Black Sea Bass (9:45-10:00 a.m.) Board Action Only**

**Background**

- At the December 2020 joint ASMFC/MAFMC meeting the Board approved the continued use of regional management approaches to set state scup recreational measures for 2021. Due to lack of 2020 recreational harvest data, Council staff recommended status quo for the 2021 Recreational Harvest Limit (RHL) and minimal changes to state recreational fisheries.
- The TC meets on January 19 to consider analysis and make recommendations on 2021 summer flounder, scup, and black sea bass state measures. **(Supplemental Materials)**

**Presentations**

- Overview of status quo measures by S. Lewis/ D. Colson Leaning
- State proposals and TC recommendations for 2021 summer flounder, scup, and black sea bass recreational measures by S. Lewis/ D. Colson Leaning

**Board Actions for Consideration**

- Approve proposals for 2021 recreational measures.

**4. Recess**

**5. Reconvene as a Joint Meeting with the MAFMC**

**6. Draft Addendum XXXIII and Council Amendment on Black Sea Bass Commercial State Allocations (12:45-4:20 p.m.) Final Action**

**Background**

- In October 2019, the Summer Flounder, Scup, and Black Sea Bass Management Board (Board) initiated development of Draft Addendum XXXIII to the Interstate Fishery Management Plan (FMP) for Summer Flounder, Scup, and Black Sea Bass, and in December 2019 the Council initiated a parallel amendment. The Draft Addendum and Council Amendment consider modifications to the black sea bass commercial state allocations, as well as whether the state allocations should be included in the Council's FMP (**Briefing Materials**).
- In December 2020, the Board and Council met jointly to consider the addendum and amendment for final action. The relevant materials from the December joint meeting (public comment summary, Advisory Panel input, and draft impact analysis) can be found here.
- At the joint December meeting, the Board and Council only approved alternatives pertaining to federal regulations. They voted to include the state allocations of the commercial black sea bass quota in the Council's FMP, and to modify the regulations for such that a federal in-season closure would occur when once landings are projected to exceed the coastwide quota plus an additional buffer of up to 5%. The Board and Council postponed decisions on modifying the state allocations to the Commission's 2021 Winter Meeting (**Briefing Materials**).
    - Council staff provided an updated recommendation on the Amendment alternatives (**Briefing Materials**).

**Presentations**

- Review of Draft Addendum XXXIII Options by C. Starks

**Board Actions for Consideration**

- Final approval of Draft Addendum XXXIII

**7. Other Business/Adjourn**

Atlantic States Marine Fisheries Commission

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# MEMORANDUM

**TO:** **Summer Flounder, Scup, and Black Sea Bass Management Board**

**FROM:** **Summer Flounder, Scup, and Black Sea Bass Technical Committee**

**DATE:** **January 22, 2021**

**RE:** **2021 Summer Flounder and Black Sea Bass Recreational Fishery Proposals**

**Technical Committee Members:** Greg Wojcik (Chair, CT), Alexa Galvan (VA), Lorena de la Garza (NC), Corinne Truesdale (RI), Peter Clarke (NJ), Steve Doctor (MD), Mark Terceiro (NOAA), Sam Truesdell (MA), Richard Wong (DNREC), Kiley Dancy (MAFMC), Julia Beaty (MAFMC), Savannah Lewis (ASMFC), Dustin Colson Leaning (ASMFC), Caitlin Starks (ASMFC)

The Summer Flounder, Scup, and Black Sea Bass Technical Committee (TC) received two proposals, one for summer flounder and one for black sea bass, from New Jersey (NJ) and Massachusetts (MA) respectively, to modify their recreational fisheries in 2021 under conservation equivalency (CE). The proposals detail how states would make small season modifications to allow for weekend openings in May. Additionally, the TC received a proposal from Virginia to participate in the February 2021 recreational fishery for black sea bass. Virginia's proposal details how the state will account for their harvest during the February 2021 fishery by adjusting measures later in the season. Due to COVID-19 effects on 2020 APAIS sampling, all three proposals rely on Marine Recreational Information Program (MRIP) estimates from 2018-2019. The TC met via conference call on January 19, 2021, and reviewed all of the proposals.

**New Jersey Proposal for 2021 Summer Flounder Recreational Fishery**

The NJ proposal opens the recreational summer flounder fishery on May 28, 2021 coinciding with the Friday before Memorial Day. NJ proposes adding nine days to the end of the season to account for the six days lost at the start of the season. NJ estimated the effect of seasonal adjustments by calculating average daily landing rates per wave from 2018-2019 MRIP data. The daily landing rate was calculated by dividing the total landing per wave (in numbers of fish) by the number of open days in each wave for each year, then taking the mean daily landing rate across the two years. The daily landing rate is lower in wave 5 than in wave 3, allowing for nine days added to wave 5 in exchange for six days removed from wave 3. Using this methodology, 2021 harvest under the proposed season is projected to be 0.09% lower than harvest under the status quo season.

NJ intends to keep all other regulations consistent in 2021 as were implemented for the previous three years, with a minimum size of 18 inches and a possession limit of 3 fish. The new open season would be 124 days from May 28 through September 28. In addition, NJ will keep special regulations for Delaware Bay the same as in previous years with a 17-inch minimum size limit and a 3 fish possession limit while the shore site on Island Beach State Park will remain at a 16-inch minimum size limit and 2 fish possession limit. Both special locations will follow the same coastwide season.

The TC had no concerns with the NJ proposal and found the methods to be technically sound. The TC recommends approval of NJ's proposal for adjusting the season of the 2021 recreational summer flounder fishery.

**Massachusetts Proposal for 2021 Black Sea Bass Recreational Fishery**

The Massachusetts Division of Marine Fisheries (DMF) is considering modifying their 2021 black sea bass recreational season for all recreational fishing modes such that the season will open on a Saturday. The status quo season is set to run from Tuesday, May 18 to Wednesday, September 8, 2021. Two alternative Saturday season opener options were examined and proposed for approval: A) Saturday, May 15 and B) Saturday, May 22. The corresponding closure date for each option was selected such that the projected harvest under the proposed season would be similar to, but no more than that of the projected harvest under the status quo season. Due to different harvest rates in wave 3 and wave 5, modifying the number of days at the beginning and end of the season cannot be done through a 1:1 exchange in days. Average daily harvest rates by wave (the mean over 2018 and 2019) were used. The analysis produced two options that are expected to produce total harvest (in numbers71q) that is equivalent to the expected MA landings under a status quo season in 2021. Option A has a season that runs from May 15 to September 3, resulting in a 112 day season. Option B has a season that runs from May 22 to September 14 and lasts 116 days. DMF will solicit public comment on the preferred option in the state before selecting a season.

The TC had no concerns with the MA proposal and found the methods to be technically sound, supporting the use of the average MRIP harvest rates 2018 and 2019 combined. The TC recommends approval of MA's proposal for adjusting the season of the 2021 black sea bass recreational fishery.

**Virginia Proposal for February 2021 Black Sea Bass Recreational Fishery**

The Virginia Marine Resources Commission (VMRC) intends to open the recreational black sea bass fishery on February 1-28, 2021, with a 12.5" minimum size limit and a 15 fish bag limit in response to the National Marine Fisheries Service opening federal waters in February 2021. VMRC will calculate landings in February from mandatory angler reporting and make season adjustments to account for February landings based on the average daily landings rate, by wave, from 2018-2019 of MRIP landings (pounds). The daily landings rate will be estimated based on the total landings (pounds) and the number of open days in each wave by year. Mandatory reporting of landings and biological data collection will continue in 2021 to ensure the characterization of the February fishery. Once February 2021 harvest has been calculated, VMRC will submit a proposal for season adjustments for the remainder of 2021 to account for February harvest to the TC for review.

The TC had no concerns with the VA proposal and found the methods to be technically sound. The TC recommends approval of VA's proposal for adjusting 2021 measures to account for February harvest.

NEW JERSEY DIVISION OF
**Fish and Wildlife**
P.O. Box 400
Trenton, NJ 08625-0400
David Golden, Director

# Memorandum

TO: Dustin Leaning, FMP Coordinator
Atlantic States Marine Fisheries Commission

FROM: Peter Clarke, Fisheries Biologist
New Jersey Bureau of Marine Fisheries

DATE: January 11, 2021

SUBJECT: New Jersey 2021 Summer Flounder Recreational Fishery Management Proposal

Included is the New Jersey proposed management options for the 2021 recreational summer flounder fishery. Under the Board/Council approved conservation equivalency plan, an adjustment to the season is being proposed by New Jersey to allow for a May 28, 2021 start date coinciding with the Friday before Memorial Day as was practiced over the last several years. No adjustment to size limits or possession limits are being requested. This option satisfies the requirements of conservation equivalency as established by the Atlantic States Marine Fisheries Commission (ASMFC). Tables describing the adjustment are included while an excel spreadsheet has been provided to the ASMFC summer flounder, scup, black sea bass technical committee for review.

**Background:**

At the December 2020 joint ASMFC/MAFMC meeting, the Board and Council approved status quo measures for the 2021 recreational summer flounder fishery. The Board determined that states may make minor adjustments to season start and end dates but requires size and possession limits remain unchanged between 2020 and 2021.

As such, measures are required to result in no change to harvest from the previous year. In 2020, New Jersey's recreational summer flounder regulations allowed a 3 fish possession limit, 18-inch size limit, and a 121-day season open from May 22 to September 19, with the opening day coinciding with the Friday before Memorial Day, a traditional start date for NJ's recreational summer flounder fishery. For 2021, New Jersey is requesting to delay the season start date by 6 days in May which would extending the season end date by 9 days in September with no request to change the minimum size or possession limit. The resulting season in New

Jersey for 2021 will be 124 days long and open May 28 through September 28, again capturing the Memorial and Labor Day weekends which are critical for the New Jersey fishery. New Jersey requested and was approved to make a similar adjustment for the 2020 fishing year, again enabling the state to capture the holiday weekends which are so vital to our fishermen and infrastructure.

**Methodology:**

MRIP estimates for 2020 are unavailable so an alternate approach to establish 2020 was utilized. New Jersey calculated the effect of season adjustments using finalized 2018 and 2019 MRIP data (Table 1). These years were chosen exclusively since measures from 2018 through 2020 were identical during all years in regard to season length, size, and possession limit and will align closely with proposed 2021 measures. While the 2017 fishing year had the same size and possession limit, the season was 17 days shorter which influences angler behavior and thus the total harvest and daily catch rates for wave 5. An average catch estimate of 2018 and 2019 was used to account for seasonal variability and was used as a proxy for the 2020 harvest and target for the 2021 fishing year (Table 2). Each wave estimate was further described through an average daily catch rate. As expressed in table 1, the average daily rate in wave 3 (May and June) is 35% greater than wave 5 (September and October). After removing 6 days from wave 3, keeping the same number of open days in wave 4, and adding 9 days to wave 5, the resulting projected harvest should be 0.09% lower in 2021 than the projected harvest of 2020 (Table 3).

The proposed measures for New Jersey's 2021 recreational summer flounder fishery are found in table 3 below. New Jersey intends to keep consistent regulations in 2021 as were implemented for the previous two years, with a minimum size of 18 inches, a possession limit of 3 fish, however with an open season of 124 days from May 28 through September 28. In addition, New Jersey will keep special regulations the same as in previous years for Delaware Bay with a 17-inch size limit and a 3 fish possession limit while our shore site on Island Beach State Park will remain at a 16-inch minimum size limit and 2 fish possession. Both special locations will follow the same New Jersey coastwide season.

**Table 1.**

**NJ 2018, 2019, and Average Harvest and Daily Catch Rates**

| Year | Wave 3 | Wave 4 | Wave 5 | Grand Total |
|---|---|---|---|---|
| **2018** | 305,180 | 680,893 | 59,125 | 1,045,198 |
| **2019** | 235,606 | 731,181 | 141,370 | 1,108,157 |
| **Average Harvest** | 270,393 | 706,037 | 100,248 | 1,076,678 |
| **Days Open 2018** | 37 | 62 | 22 | 121 |
| **Days Open 2019** | 38 | 62 | 21 | 121 |
| **2018 Daily Catch Rate** | 8,248 | 10,982 | 2,688 | |
| **2019 Daily Catch Rate** | 6,200 | 11,793 | 6,732 | |
| **Average Daily Catch Rate** | 7,224 | 11,388 | 4,710 | |

**Table 2.**

## Estimated 2020 Harvest and 2021 Target

| | Size (inches) | Possession | Season | Total Days Open | 2020 Projected Harvest and 2021 Target |
|---|---|---|---|---|---|
| **NJ 2020 Season** | 18 | 3 | May 22 - Sept 19 | 121 | |
| **NJ 2020 Days Open** | 40 | 62 | 19 | 121 | |
| **2020 Projected Harvest** | 288,965 | 706,037 | 89,484 | | 1,084,487 |

**Table 3.**

## NJ 2021 Proposed Season

| | Size (inches) | Possession | Season | Days Open | Percent of 2021 Target RHL |
|---|---|---|---|---|---|
| **NJ 2021 Status Quo Season** | 18 | 3 | May 22-Sept 19 | 121 | |
| **2021 Status Quo Days** | 40 | 62 | 19 | 121 | |
| **2021 Status Quo Harvest** | 288,965 | 706,037 | 89,484 | 1,084,487 | 0.00% |
| | | | | | |
| | **Size (inches)** | **Possession** | **Season** | **Days Open** | **Percent of 2021 Target RHL** |
| **NJ 2021 Shift Season** | 18 | 3 | May 28-Sept 28 | 124 | |
| **2021 Shift Days** | 34 | 62 | 28 | 124 | |
| **2021 Shift Harvest** | 245,621 | 706,037 | 131,872 | 1,083,529 | -0.09% |

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RONALD S. AMIDON, Commissioner
DANIEL J. MCKIERNAN, Director

# Massachusetts black sea bass fishery Conservation Equivalency proposal

**January 8, 2020**

## Overview

The Massachusetts Division of Marine Fisheries (DMF) submits this Conservation Equivalency proposal to modify the 2021 black sea bass season for all recreational fishing modes such that the season will begin on a Saturday. The status quo season is set to run from Tuesday, May 18 to Wednesday, September 8, 2021. Two options were examined for season openers: (A) Saturday, May 15 and (B) Saturday, May 22. The corresponding season closure date for each option was selected based on its resulting in an equal or lesser projected harvest than the status quo season (Table 1). DMF seeks approval of both options, one of which would be selected after public comment is solicited in the state. Implementation would occur prior to the season's commencement, with appropriate notification to fishery participants.

*Table 1. Status quo and proposed regulations for the 2021 Massachusetts black sea bass recreational fishery.*

| | Season | Bag Limit | Size Limit |
|---|---|---|---|
| Status quo | May 18–September 8 (114 days) | 5 fish | 15" |
| Option A | May 15–September 3 (112 days) | 5 fish | 15" |
| Option B | May 22–September 14 (116 days) | 5 fish | 15" |

## Introduction

The Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Management Board approved status quo recreational fishing measures for 2021 during their December 2020 meeting. However, they specified that they would be willing to review Conservation Equivalency proposals that sought minor adjustments to the fishing season.

Massachusetts requests an accommodation to open the season on a Saturday. The state has had a Saturday opener for the black sea bass fishery since 2013, except for 2020 when changes were expressly prohibited, and there is interest from the fishing community in maintaining this standard. The status quo opening day of May 18 is a Tuesday in 2021; the two closest Saturdays to the status quo opener are proposed. Recent information available to use in the analysis were MRIP harvest data from 2018 and 2019.

## Analysis

The status quo opening date of May 18 is a Tuesday and the previous and subsequent Saturdays (May 15 and May 22, respectively) were both examined as potential season openers. The May 15 date requires the end of the season to be truncated to compensate for an additional three Wave 3 equivalent days while the May 22 date results in an end-of-season extension of four Wave 3 equivalent days.

MRIP data from 2018 and 2019 were used to examine the impact of season adjustments, as 2020 data were not available for use due to COVID-19 effects on APAIS sampling. Additional data from years prior to 2018 were not included as Massachusetts' recreational black sea bass season has otherwise not been open in September since 2014[1]. Daily harvest rates by wave were used to equilibrate the status quo and proposed seasons. Because Wave 3 and Wave 5 are unequal in their harvest rates, adjusting the schedule for a season that bridges these waves is not a 1:1 change in days. To reduce impacts of annual variability, average daily harvest rates by wave (the mean over 2018 and 2019) were used. The PSEs for all data used in this analysis were less than 50 (Table 2).

*Table 2. Data used in the analyses. The 2018 and 2019 combined data set calculates harvest rate as the average of the 2018 and 2019 harvest rate. The 2018 and 2019 combined PSE was calculated as $PSE_w = \sqrt{\sum_y V_{y,w}}/\sum_y H_{y,w}$ where $y$ is year, $w$ is wave, $V$ is the variance (found in the MRIP estimate files) and $H$ is harvest.*

| Year | Wave | Harvest (N) | PSE | Open days | Harvest Rate |
|---|---|---|---|---|---|
| 2018 | 3 | 548,602 | 26.5 | 43 | 12,758 |
| | 4 | 92,565 | 26.5 | 62 | 1,493 |
| | 5 | 36,977 | 42.6 | 12 | 3,081 |
| 2019 | 3 | 306,056 | 31.3 | 44 | 6,956 |
| | 4 | 146,788 | 21.4 | 62 | 2,368 |
| | 5 | 73,749 | 41.8 | 8 | 9,219 |
| 2018 & 2019 average | 3 | 427,329 | 20.4 | 43.5 | 9,857 |
| | 4 | 119,677 | 16.7 | 62 | 1,930 |
| | 5 | 55,363 | 31.3 | 10 | 6,150 |

Notably, in 2019, the harvest rate during Wave 5 (9,219 fish/day) was larger than during Wave 3 (6,956 fish/day). This was not consistent with 2018 where the Wave 3 rate was approximately four times larger than the Wave 5 rate (Table 2). While the 2019 Wave 5 rate is greater than the 2018 Wave 5 rate, the 2019 Wave 3 rate also appears unusually low compared to the 2015–2018 Wave 3 rates that all range between 9,688 fish/day and 13,091 fish/day. The 2018 data are more consistent with a general understanding of the Massachusetts fishery; black sea bass spawn in the spring and early summer months and during this time they aggregate and exhibit high availability to the fishery.

The steps that were used in the analysis are listed below. See Appendix 1 for equations and Table 3 for resulting calculations.

(1) Average daily harvest rates by wave[2] were calculated for the combined 2018 and 2019 MRIP data (Table 2).

[1] MRIP did report harvest during 2017 Wave 5 although the fishery was not open.
[2] See Appendix 3 for an alternative approach to calculating average harvest rate.

(2) The number of Wave 3 days to be accounted for was calculated: this was a deficit of three days for Option A (May 15 opening) and a surplus of four days for Option B (May 22 opening).
(3) The "exchange rate" was calculated as the ratio of Wave 3 average daily harvest rate to Wave 5 average daily harvest rate. Since the harvest rates differ, this allows the number of Wave 5 days to be adjusted on a comparable scale to changes in the number of Wave 3 days.
(4) The number of Wave 5 harvest rate days to be added or subtracted to the end of the season is calculated by multiplying the number of days adjustment to the season during Wave 3 by the exchange rate. As a conservative measure, this number is rounded down when considering adding days to the end of the season and rounded up when considering subtracting days from the beginning of the season.

Option A, assuming a start date of May 15, results in a season that closes on September 3 and lasts 112 days. Option B, the May 22 opening day, results in a season that closes on September 14 and lasts 116 days (Table 3). Each of the proposed seasons are expected to produce total harvest (in numbers) that is conservationally equivalent to the expected Massachusetts landings during the status quo 2021 season (114 days from May 18 through September 8), assuming daily harvest rates are similar to the averaged 2018/2019 rates. Expectations using only 2018 and 2019 data are given in Appendix 2.

*Table 3. Summary of calculations to arrive at closure date for alternative opening dates using 2018 and 2019 combined MRIP data (see steps given in the text and Table A1.1). Column names are defined as follows. Opening day: proposed first day of the season. Exchange rate: ratio of harvest rate in Wave 3 to that in Wave 5 (Table A1.1, Step 3). n Day W5*: theoretical number of Wave 5 days to add or subtract. n Day W5: actual number of Wave 5 days added or subtracted. Close Date: date of season closure given data set. Season days: number of days total in the proposed season. The status-quo season runs May 18 – Sep 5 and is 114 days.*

| Opening day | Exchange Rate | n Day W5* | n Day W5 | Close Date | Season Days |
|---|---|---|---|---|---|
| A: 5/15/2021 | 1.6 | -4.81 | -5 | 9/3/2021 | 112 |
| B: 5/22/2021 | 1.6 | 6.41 | 6 | 9/14/2021 | 116 |

These analyses assume that the combined 2018 and 2019 average daily harvest rate by wave represents a reasonable expectation for the daily harvest rate by wave during 2021. Such an assumption is predicated on several characteristics of the fishery being similar to the conditions under which the data were generated such as black sea bass availability, total fishing effort, overall composition and availability of other recreationally targeted species and angler preferences.

## Summary

Both Option A (5/15/2021 – 9/3/2021) and Option B (5/22/2021 – 9/14/2021) are expected to result in harvest similar to the expectation under the status quo given the data that were used to produce the estimates (i.e., average MRIP harvest rates for 2018 and 2019 combined). The purpose of using 2018 and 2019 together was to temper uncertainty; the averaging mitigates the impact of some of the annual variability and potential anomalies such as observed in 2019.

## Appendix 1

Appendix 1 lists the equations used in the steps listed in the Analysis section of the main text.

*Table A1.1. Analysis equations, following steps in the main text.*

| Step | Equation | Definitions | |
|---|---|---|---|
| 1 | $r_w = \frac{1}{Y}\sum_y \left[\frac{1}{d_{w,y}} h_{w,y}\right]$ | $r_w$ | Average daily harvest rate by wave for combined data set. |
| | | $w$ | wave. |
| | | $y$ | Data year. |
| | | $Y$ | Number of years. |
| | | $h_{w,y}$ | Total harvest in numbers during wave $w$ of data year $y$. |
| | | $d_{w,y}$ | Number of open days during wave $w$ of data year $y$. |
| 3 | $x_{w3w5} = \frac{r_{w3}}{r_{w5}}$ | $x_{w3w5}$ | Exchange rate ratio (Waves 3:Wave 5) |
| 4 | $\tilde{d} = \lfloor \check{d} x_{w3w5} \rfloor$ | $\tilde{d}$ | Number of days to add/subtract during Wave 5. |
| | | $\check{d}$ | Number of Wave 3 equivalent days to be accounted for (negative for May 15th start). |
| | | $\lfloor \dots \rfloor$ | Floor function (i.e., round down to nearest integer. |

## Appendix 2

Appendix 2 expands the analyses to include the projected season lengths using the 2018 and 2019 data individually. This gives a sense for how differences in the harvest rate translate through to the season length calculation and offers a comparison to the analyses above that used the averaged 2018 and 2019 harvest rates. This analysis was slightly more complex because the 2018 data led to a projected season that ends in August which requires also using the Wave 4 daily harvest rates. Thus the analysis steps and the equation table (here Table A2.1) have been expanded.

The steps that were used in the Appendix 2 analysis are listed below. See Table A2.1 for equations.

(1) Average daily harvest rates by wave were calculated for (i) 2018, (ii) 2019 and (iii) 2018 and 2019 (Table A2.1). For (i) and (ii) the total harvest by wave was simply the total harvest in numbers by wave and year divided by the corresponding number of open days that the fishery was open. For (iii) the harvest rate was calculated as the average of 2018 and 2019 harvest rates.
(2) The number of Wave 3 days to be accounted for was calculated: this was a deficit of three days for Option A (May 15 opening) and a surplus of four days for Option B (May 22 opening).
(3) The "exchange rate" was calculated as the ratio of Wave 3 harvest rate to Wave 5 harvest rate. Since the harvest rates differ, this allows the number of Wave 5 days to be adjusted on a comparable scale to changes in Wave 3.
(4) The number of Wave 5 harvest rate days to be added or subtracted to the end of the season was calculated by multiplying the number of days adjustment to the season during Wave 3 by the exchange rate. As a conservative measure, this number was rounded down when

considering adding days to the end of the season and rounded up when considering subtracting days from the beginning of the season.

a. In 2018 Option A (May 15 opening) there were not enough days during Wave 5 to make up for the additional days fished during Wave 3, meaning that Wave 4 days had to also be trimmed from the end of the season. Since the Wave 4 harvest rate differs from that of Wave 5, the following steps were taken.
    i. Calculate the total harvest that needs to be accounted for (i.e., the number of days added to Wave 3 multiplied by the Wave 3 harvest rate).
    ii. Calculate the *remaining* harvest that needs to be accounted for by subtracting expected Wave 5 total harvest (8 days) from the total deficit.
    iii. Divide the remainder by the Wave 4 harvest rate to determine the expected number of Wave 4 days that would be required to harvest the remainder.
b. Add the number of Wave 4 days required to the number of available Wave 5 days (i.e., 8).

The three data sources (2018, 2019 and 2018 & 2019) result in different season lengths because the estimated harvest rates vary. Assuming a May 15 opening day (Option A) the 2018 data alone produce a season that is 99 days long, the 2019 data alone result in a season that is 114 days long and the averaged season length – reported in the main text – was 112 days (Table A2.2). Assuming a May 22 opener, the 2018 data produce a 126 day season, the 2019 data a 113 day season and the average a 116 day season (Table A2.3).

*Table A2.1. Analysis equations, following steps in the text. Additional steps are needed for the analysis of the 2018 data alone.*

| Step | Equation | Definitions | |
|---|---|---|---|
| 1 | $r_w = \frac{1}{Y}\sum_y \left[\frac{1}{d_{w,y}} h_{w,y}\right]$ | $r_w$ | Average daily harvest rate by wave for combined data set. |
| | | $w$ | wave. |
| | | $y$ | Data year. |
| | | $Y$ | Number of years. |
| | | $h_{w,y}$ | Total harvest in numbers during wave $w$ of data year $y$. |
| | | $d_{w,y}$ | Number of open days during wave $w$ of data year $y$. |
| 3 | $x_{w3w5} = \frac{r_{w3}}{r_{w5}}$ | $x_{w3w5}$ | Exchange rate ratio (Waves 3:Wave 5) |
| 4 | $\tilde{d}_{w5} = \check{d} x_{w3w5}$ | $\tilde{d}_{w5}$ | Number of additional days during Wave 5. |
| | | $\check{d}$ | Number of Wave 3 days to be accounted for. |
| *If adding days to Wave 5, stop here and* | $\tilde{d} = \lfloor \tilde{d}_{w5} \rfloor$ | $\tilde{d}$ | Number of days to add or subtract from the end of the season. |
| | | $\lfloor \dots \rfloor$ | Floor function (i.e., round down to nearest integer. |
| 4.a.i. | $D = \check{d} r_{w3}$ | $D$ | Total Wave 3 deficit that needs to be accounted for. |

| | | | |
|---|---|---|---|
| 4.a.ii. | $\dot{D} = D - 8r_{w5}$ | $\dot{D}$ | Remaining deficit after all possible Wave 5 harvest has been accounted for. |
| | | $8$ | Status-quo season closes Sep 8, meaning there are 8 available Wave 5 days. |
| 4.a.iii. | $\tilde{d}_{w4} = \frac{\dot{D}}{r_{w4}}$ | $\tilde{d}_{w4}$ | Number of additional days to remove during Wave 4. |
| 4.b. | $\tilde{d} = \begin{cases} if\ \tilde{d}_{w5} \leq 8 & \lfloor \tilde{d}_{w5} \rfloor \\ else & 8 + \lfloor \tilde{d}_{w4} \rfloor \end{cases}$ | *Note: floor function still used (i.e., rounded down because days are considered negative.* | |

*Table A2.2. Summary of calculations to arrive at closure date for season beginning on May 15. Column names are defined as follows. Data year: year or years used to calculate season length. Exchange rate: ratio of harvest rate in Wave 3 to that in Wave 5 (See A2.1 Step 3). n Day W5*: theoretical number of Wave 5 days to add. n Avail Day W5: number of available days in Wave 5 to use (8 since the status quo season runs to Sep 8). n Day W5**: number of actual days that can be added during Wave 5. n Day W5: rounded number of Wave 5 days. Total N Diff: sum of number of fish representing the front-end season change (see Table A2.1 Step 4.a.i). Remain Diff: remaining number of fish that need to be accounted for after using all Wave 5 days (see Table A2.1 Step 4.a.ii). n Day W4*: theoretical number of Wave 4 days to add (see Table A2.1 Step 4.a.iii). n Day W4: rounded number of Wave 4 days. n Day Close: total number of days that need to be closed at the end of the season (i.e., sum of Wave 5 closure days and Wave 4 closure days). Close Date: date of season closure given data set. Season days: number of days total in the proposed season.*

| Data Year | Exchange Rate | n Day W5* | n Avail Day W5 | n Day W5** | n Day W5 |
|---|---|---|---|---|---|
| 2018 | 4.14 | -12.42 | -8 | -8.00 | -8 |
| 2019 | 0.75 | -2.26 | -8 | -2.26 | -3 |
| 2018 & 2019 | 1.60 | -4.81 | -8 | -4.81 | -5 |

*Table A2.2 continued.*

| Total N Diff | Remain Diff | n Day W4* | n Day W4 | n Day Close | Close Date | Season Days |
|---|---|---|---|---|---|---|
| -38,275 | -13,623 | -9.12 | -10 | -18 | 8/21/2021 | 99 |
| -20,867 | 0 | 0.00 | 0 | -3 | 9/5/2021 | 114 |
| -29,571 | 0 | 0.00 | 0 | -5 | 9/3/2021 | 112 |

*Table A2.3. Summary of calculations to arrive at closure date for season beginning on May 22. Column names are defined as follows. Data year: year or years used to calculate season length. Exchange rate: ratio of harvest rate in Wave 3 to that in Wave 5 (See Table A2.1 Step 3). n Day W5*: theoretical number of Wave 5 days to add. n Day W5: actual number of Wave 5 days to add. Close Date: date of season closure given data set. Season days: number of days total in the proposed season.*

| Data Year | Exchange Rate | n Day W5* | n Day W5 | Close Date | Season Days |
|---|---|---|---|---|---|
| 2018 | 4.14 | 16.56 | 16 | 9/24/2021 | 126 |
| 2019 | 0.75 | 3.02 | 3 | 9/11/2021 | 113 |
| 2018 & 2019 | 1.60 | 6.41 | 6 | 9/14/2021 | 116 |

*Table A2.4. Summary of closure dates and season days by Saturday opener and data source. The status quo season runs May 18 – September 8 and is 114 days.*

| **Data** | **Open May 15 (Option A)** | **Open May 22 (Option B)** |
|---|---|---|
| 2018 | Aug 21 (99) | Sep 24 (126) |
| 2019 | Sep 5 (114) | Sep 11 (113) |
| 2018 & 2019 | Sep 3 (112) | Sep 14 (116) |

## Appendix 3

The primary analysis calculates the average harvest rate in 2018 and 2019 as the mean of the 2018 and 2019 average harvest. Appendix 3 examines an alternative definition of the mean, defined as the average harvest rate of the combined data set (Table A3.1). The two approaches result in only marginally different season lengths. Using the method in the main text the May 15 starting day season length is 112 days as opposed to 111 using the alternative approach. For the May 22 start the main text method results in a season length of 116 days as opposed to 117 under the alternative (Table A3.2).

*Table A3.1. Alternative approaches to calculating average harvest for 2018 and 2019 combined. Refers to the difference in Step 1 in Table A2.1.*

| Version | Equation | Definitions |
|---|---|---|
| Main text | $r_w = \frac{1}{Y}\sum_y \left[\frac{1}{d_{w,y}} h_{w,y}\right]$ | $r_w$ Average daily harvest rate by wave for combined data set.<br>$w$ wave.<br>$y$ Data year.<br>$Y$ Number of years.<br>$h_{w,y}$ Total harvest in numbers during wave $w$ of data year $y$.<br>$d_{w,y}$ Number of open days during wave $w$ of data year $y$. |
| Appendix A3 | $r_w = \frac{\sum_y h_{w,y}}{\sum_y d_{w,y}}$ | *Here $h$ and $d$ represent the sum of the data over both years.* |

*Table A3.2. Comparison of closing dates using two different approaches to calculate the mean 2018/2019 harvest rate (see Table A3.1). Type column refers to either the dates in the status quo season or to the method of calculating the mean.*

| Type | May 15 comparison | | May 22 comparison | |
|---|---|---|---|---|
| | Close date | N day | Close date | N day |
| Status quo season | 9/8/2021 | 114 | 9/8/2021 | 114 |
| Mean of means (main text) | 9/3/2021 | 112 | 9/14/2021 | 116 |
| Overall mean (Appendix 3) | 9/2/2021 | 111 | 9/15/2021 | 117 |

# COMMONWEALTH of VIRGINIA

*Marine Resources Commission*
*Building 96*
*380 Fenwick Road*
*Fort Monroe, VA 23651*

Matthew J. Strickler
Secretary of Natural Resources

Steven G. Bowman
Commissioner


To: Savannah Lewis, ASMFC
Julia Beaty, MAFMC

From: Alexa Kretsch, VMRC

Date: January 5, 2021

Subject: February 2021 Recreational Black Sea Bass Season

The Virginia Marine Resources Commission (VMRC) is proposing to open the recreational black sea bass fishery for February 1-28, 2021 with a 12.5" minimum size limit and a 15 fish bag limit in response to the National Marine Fisheries Service opening federal waters in February 2021. VMRC will make season adjustments to the open season (May 15 – December 31) to account for additional landings that occur in February 2021.

In 2020, VMRC recorded a total of 14,236 pounds of black sea bass landed in Virginia during the February recreational season, according to mandatory permit reporting requirements. Biological data was collected by VMRC MRIP staff to estimate an average weight. Using average daily landings rates by wave, a closure of 14 days in wave 3 would result in savings of 14,583 pounds. The VMRC therefore amended the 2020 season to be open from May 29 through December 31 for a total closure of 14 days. Due to COVID-19 disruption to MRIP sampling, VMRC is unable to ascertain the effect of the 14 day closure. However, when VMRC forfeited 21 days from wave 3 of the 2019 black sea bass season to account for 10,082 pounds landed in the 2019 February season, wave 3 harvest in 2019 was less than in 2017 and 2018 by 11,324 pounds and 18,178 pounds, respectively.

Virginia asks that the technical committee support this proposal for a February 2021 recreational black sea bass season. Virginia will continue to monitor landings and collect biological data, using the same methods as in 2019 and 2020, to ensure accurate characterization of the 2021 February fishery. Virginia's February recreational black sea bass season has operated as a no-cost permit program in which the captain or operator of any vessel fishing for black sea bass must have a permit. That permit comes with two types of reporting requirements. Each vessel must hail our Marine Police Operations station at the start of the trip, which allows our MRIP

staff or law enforcement to coordinate meeting some vessels at the dock when they land. MRIP staff counts the fish landed and collects lengths and weights. In 2020, 266 fish were measured from 21 trips. Each permittee must also report to the commission each trip taken, how many anglers, and the number of black sea bass kept and released by all anglers on the vessel. The MRIP-collected measurements determine an average weight per fish, using that data to create a length-weight relationship for conversion where necessary. Multiplying the average weight by the number of angler-reported black sea bass results in the total landings in pounds.

Once February 2021 harvest has been calculated, VMRC will submit a proposal for season adjustments to the 2021 season to account for February harvest to the technical committee for review. Season adjustments in 2021 will be based on the average daily landing rate from 2018-2019, which represent the most recent two years of complete MRIP landings. The daily landing rate will be estimated based on the total pounds landed and the number of open days in each wave by year.