



Mid-Atlantic Fishery Management Council

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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: January 12, 2017

TO: Chris Moore, Executive Director

FROM: Brandon Muffley and Kiley Dancy, Staff

SUBJECT: Black Sea Bass Specifications for 2017-2019

Executive Summary

In 2015, two-year specifications were implemented for black sea bass, establishing catch and landings limits for the 2016 and 2017 fishing years. These specifications were set with the understanding that the 2017 limits would likely be revised based on the results of December 2016 benchmark stock assessment. This benchmark assessment is complete and was reviewed in December 2016 and forms the basis for updated specifications recommendations. On January 25, 2017, the Council's Scientific and Statistical Committee (SSC) is scheduled to review the assessment and peer review results, and consider recommendations for annual Acceptable Biological Catch (ABC) levels for 2017-2019. Based on the recommendations of the SSC, the Monitoring Committee will meet on January 26 to recommend 2017-2019 sector-specific Annual Catch Limits (ACLs) and Annual Catch Targets (ACTs) for the commercial and recreational fisheries. In February 2017, the Council will meet jointly with the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Board (Board) to consider the SSC, Monitoring Committee, and Advisory Panel recommendations, and recommend revised catch and landings limits for 2017 and beyond.

Based on the results of the benchmark stock assessment, the black sea bass stock north of Cape Hatteras, NC was not overfished and overfishing was not occurring in 2015, the terminal year of the assessment. The model-estimated spawning stock biomass (SSB) in 2015 was 48.89 million lb (22,176 mt), 2.3 times the spawning stock biomass at maximum sustainable yield, $SSB_{MSY} = 21.31$ million lb (9,667 mt). The fishing mortality rate (F) in 2015 was 0.27, below the fishing mortality threshold reference point $F_{MSYPROXY} = F_{40\%} = 0.36$.

Using projections from the benchmark stock assessment, staff recommends setting three year specifications for black sea bass and an Acceptable Biological Catch (ABC) of 10.47 million pounds (4,750 mt) for 2017. This results in a commercial ACL of 5.09 million pounds (2,311 mt) and a recreational ACL of 5.38 million pounds (2,439). Staff recommend that the commercial ACT and the recreational ACT be set equal to their respective sector ACLs for 2017. After removing projected discards, the recommended 2017 commercial quota is 4.12 million pounds (1,869 mt) and the recommended

recreational harvest limit (RHL) is 4.29 million pounds (1,945 mt; Table 1). This represents a 53% increase in the commercial quota and a 52% increase in the RHL from the 2016 specifications.

For 2018, staff recommend an ABC of 8.94 million pounds (4,057 mt), a commercial ACL of 4.35 million pounds (1,974 mt), and a recreational ACL of 4.59 million pounds (2,083 mt). Staff recommend that the commercial and recreational ACTs be set equal to their respective ACLs for 2018. After removing projected discards, the recommended 2018 commercial quota is 3.52 million pounds (1,596 mt) and the recommended recreational harvest limit is 3.66 million pounds (1,661 mt; Table 1). The declining recommended ABC between 2017 and 2018 is largely due to the extremely robust 2011 year class beginning to decline in abundance and exit the fishery.

For 2019, staff recommend an ABC of 7.97 million pounds (3,617 mt), a commercial ACL of 3.88 million pounds (1,760 mt), and a recreational ACL of 4.10 million pounds (1,858 mt). Staff recommend that the commercial and recreational ACTs be set equal to their respective ACLs for 2019. After removing projected discards, the 2019 recommended commercial quota is 3.14 million pounds (1,423 mt) and the recommended recreational harvest limit is 3.27 million pounds (1,481 mt; Table 1). Similarly to 2018, the 2019 recommended ABC continues to decline due to the 2011 year class.

As described in the July 2016 staff quota memo for black sea bass,¹ the Council and Commission's Monitoring and Technical Committees conducted a thorough review of current commercial management measures in 2015. No changes to black sea bass measures were adopted; however, Council and Board members indicated that additional exploration of some measures may be warranted, as described under "Other Management Measures" in this document. Additional data and analyses are needed to address the questions raised, and staff will continue to work with the Monitoring and Technical Committees on these issues. At this time, staff do not recommend any changes to the current commercial measures, including the 11-inch minimum fish size, mesh size requirements and seasonal thresholds, or pot/trap gear requirements.

Recreational management measures (possession limits, size limits, and seasons) that will be used to achieve the harvest limit for the recreational fishery in 2017 are being developed in parallel to changes in catch and landings limits, with the intention of implementing new measures as soon as possible in 2017. Specific recreational measures cannot be recommended until a revised 2017 ABC and recreational harvest limit are recommended by the SSC and Monitoring Committee. However, staff are working to compile the information necessary to recommend recreational adjustments as soon as possible once an updated harvest limit recommendation becomes available. A separate memo will be provided to the Monitoring Committee reviewing recreational fishery data and next steps for development of recreational measures.²

¹ <http://www.mafmc.org/s/bsbquota-2016-memo.pdf>.

² See Monitoring Committee meeting materials at: <http://www.mafmc.org/council-events/2017/jan-bsb-monitoring-committee>.

Table 1: Staff-recommended multi-year catch and landings limits for black sea bass for 2017-2019.

Management Measure	2017		2018		2019		Basis
	mil lb.	mt	mil lb.	mt	mil lb.	mt	
OFL	12.05	5,467	10.29	4,669	9.18	4,163	Stock assessment projections
ABC	10.47	4,750	8.94	4,057	7.97	3,617	Stock assessment projections/staff recommended application of Council risk policy
ABC Landings Portion	8.41	3,814	7.18	3,258	6.40	2,904	80.3% of ABC, based on average 2013 – 2015 % landings portion of total catch
ABC Discards Portion	2.06	936	1.76	799	1.57	713	19.7% of ABC, based on average 2013 – 2015 % discards portion of total catch
Commercial ACL	5.09	2,311	4.35	1,974	3.88	1,760	49% of ABC landings portion (per FMP allocation) + 47.2 % of ABC discards portion
Commercial ACT	5.09	2,311	4.35	1,974	3.88	1,760	Commercial ACL, less deduction for management uncertainty
Projected Commercial Discards	0.97	442	0.83	377	0.74	336	47.2% of ABC discards portion, based on 2013-2015 average % discards by sector
Commercial Quota	4.12	1,869	3.52	1,596	3.14	1,423	Commercial ACT, less discards
Recreational ACL	5.38	2,439	4.59	2,083	4.10	1,858	51% of ABC landings portion (per FMP allocation) + 52.8 % of ABC discards portion
Recreational ACT	5.38	2,439	4.59	2,083	4.10	1,858	Recreational ACL, less deduction for management uncertainty
Projected Recreational Discards	1.09	494	0.93	422	0.83	376	52.8 % of ABC discards portion, based on 2013-2015 average % discards by sector
Recreational Harvest Limit	4.29	1,945	3.66	1,661	3.27	1,481	Recreational ACT, less discards

Introduction

The Magnuson-Stevens Act (MSA) requires each Council's SSC to provide ongoing scientific advice for fishery management decisions, including recommendations for ABC, preventing overfishing, and maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the annual ABC recommendations of the SSC. In addition, the Summer Flounder, Scup, and Black Sea Bass Monitoring Committee established by the Fishery Management Plan (FMP) is responsible for developing recommendations for management measures designed to achieve the recommended catch limits.

Multi-year specifications may be set for black sea bass for up to three years at a time. The SSC must recommend ABCs that addresses scientific uncertainty, while the Monitoring Committee must recommend annual catch targets (ACTs) that address management uncertainty. Based on the SSC and Monitoring Committee recommendations, the Council will make a recommendation to the National Marine Fisheries Service (NMFS) Greater Atlantic Regional Administrator. Because the FMP is cooperatively managed with the Atlantic States Marine Fisheries Commission, the Commission's Summer Flounder, Scup, and Black Sea Bass Board will meet jointly with the Council to recommend black sea bass catch limits and management measures. In this memorandum, information is presented to assist the SSC and Monitoring Committee in developing recommendations for the Council and Board to consider for the 2017-2019 fishing years for black sea bass.

Additional relevant information about fishery performance and past management measures is presented in the June 2016 Black Sea Bass Fishery Information Document prepared by Council staff and the June 2016 Fishery Performance Report for black sea bass developed by the Council and Commission Advisory Panels. These documents, along with the relevant SARC 62 benchmark assessment documents, are available at: <http://www.mafmc.org/ssc-meetings/2017/jan-25>.

Recent Catch and Landings

According to the NMFS most recent and comprehensive commercial landings information³, final commercial landings in 2015 were 2.30 million lb (1,042 mt), an increase from 2.18 million lb (989 mt) in 2014 which corresponds to an increase in the 2015 quota. Preliminary 2016 coastwide commercial landings, according to the NMFS weekly quota reports as of the week ending December 31, 2016, indicate landings totaled 2.52 million lb (1,141 mt) which accounts for 93% of the 2016 coastwide commercial quota (Table 2).

According to the Marine Recreational Information Program (MRIP) estimates, recreational landings in 2015 north of Cape Hatteras, NC were 3.79 million lb (1,719 mt), approximately 63% above the 2015 RHL of 2.33 million lb. In 2016, recreational landings through wave 5 (January-October 2016) are estimated to be 4.55 million lb (2,064 mt), and are projected to be 4.67 million lb (2,116 mt) through the end of 2016,⁴ approximately 100% above the 2016 RHL.

³ NMFS personal communication

⁴ Projected using 2015 proportions of landings by wave (98% of 2015 landings occurred in waves 1-5).

Table 2: 2016 black sea bass commercial quota and landings by state for the week ending December 31, 2016.

State	Cumulative Landings (lb)	Quota (lb) ^a	Percent of Quota (%)
ME	0	--	--
NH	0	--	--
MA	353,640	--	--
RI	294,382	--	--
CT	26,231	--	--
NY	186,311	--	--
NJ	521,805	--	--
DE	95,149	--	--
MD	231,994	--	--
VA	487,141	--	--
NC	315,028	--	--
Other	4,418	--	--
Totals	2,516,481	2,702,867	93

^a State-by-state quotas contained in the Commission’s FMP are not administered or monitored in-season by GARFO. Source: NMFS Weekly Quota Report for week ending December 31, 2016.

Regulatory Review

Prior to the 2016 benchmark assessment, the most recent accepted benchmark assessment on black sea bass had been accepted in December 2008 by the Data Poor Stock Working Group (DPSWG) Peer Review Panel.⁵ This assessment was based on a statistical catch at length, or “SCALE” model, and was last updated in 2012 with data through 2011. However, the SSC did not accept the Overfishing Limit (OFL) generated from this assessment, due to concerns about the unresolved uncertainty in the OFL related to potential stock structure within the designated management unit, life history, and natural mortality. The SSC designated the assessment as “Level 4,” now known as an assessment for which the OFL cannot be specified given current state of knowledge or “Catch Based ABC.” The SSC considered the following to be the most significant sources of uncertainty:

- Difficulty in determining appropriate reference points due to atypical life history strategy (protogynous hermaphrodite);
- Assessment assumes a completely mixed stock, while tagging analyses suggesting otherwise;
- Uncertainty exists with respect to M because of the unusual life history strategy the current assumption of a constant M in the model for both sexes may not adequately capture the dynamics in M); and
- Concern about the application of trawl calibration coefficients (ALBATROSS IV vs BIGELOW) and their influence on the selectivity pattern and results of the assessment.

Because the SSC did not accept the OFL derived from this assessment, for the past several years the SSC has used alternative methods to recommend ABCs, as per the Council’s risk policy. Each year from 2010-

⁵ Northeast Data Poor Stocks Working Group. 2009. The Northeast Data Poor Stocks Working Group Report, December 8-12, 2008 Meeting. Part A. Skate species complex, deep sea red crab, Atlantic wolffish, scup, and black sea bass. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 09-02; 496 p. Available at <http://www.nefsc.noaa.gov/publications/crd/crd0902/>.

2012, the SSC recommended an ABC of 4.50 million lb (2,041 mt), based on a constant catch approach. For 2013-2015, the constant catch level was revised to 5.50 million lb (2,494 mt) after the SSC reviewed new information relative to fishery performance, abundance, and recruitment, and concluded that the continued application of the previous constant catch level was overly conservative.⁶

In September 2015, the SSC adopted a new, internally reviewed methodology for recommending catch limits for stocks where the OFL cannot be specified given the current state of knowledge. This approach used an MSE approach as developed by Carruthers et al. (2014)⁷ to evaluate the relative performance of a suite of data limited analytical techniques.⁸ Using this approach, the SSC recommended 2016 and 2017 ABCs of 6.67 million lb (3,024 mt). This resulted in a commercial ACL of 3.15 million lb (1,428 mt) and a recreational ACL of 3.52 million lb (1,597 mt). These measures are currently implemented for the 2017 fishing year, and would be revised if the SSC recommends ABCs based on new scientific information, and those recommendations are subsequently adopted by the Council and Board.

Of note, on December 21, 2016 the NMFS published revised final 2017 specifications for black sea bass due to the commercial fishery exceeding the 2015 ACL. The commercial fishery exceeded the 2015 commercial landings quota by 3.8%; while discards were over three times higher than anticipated and accounted for 44.4% of the total commercial catch. This resulted in the ACL being exceeded and a reduction in the 2017 commercial ACT by nearly 850,000 pounds.

Stock Status and Biological Reference Points

A benchmark stock assessment for black sea bass was peer-reviewed and approved at the 62nd Stock Assessment Review Committee (SARC 62) in December 2016.⁹ To address concerns raised during the SAW/SARC 53 review (NEFSC 2012)¹⁰ regarding potential spatial structure of the stock, the new assessment modeled sea bass as two separate sub-units (North and South) divided at approximately Hudson Canyon. As the result of this new information and changes to the modelling approaches, new biological reference points were developed as part of the assessment. Due to the lack of a stock/recruit relationship, a direct calculation of MSY and associated reference points (F and biomass) was not feasible and proxy reference points were approved for management use. Each sub-unit was modelled separately and the average F and combined biomass and spawning stock biomass (SSB) across sub-units were used to develop stock-wide reference points. Also of note, SSB calculations and SSB reference points include both males and females. The average fishing mortality threshold for black sea bass is $F_{MSY} = F_{40\%}$ (as $F_{MSYproxy} = 0.36$, and the combined $SSB_{MSYproxy}$ is 21.3 million lb (9,667 mt). The minimum stock size threshold, $\frac{1}{2} SSB_{MSY}$ is estimated to be 10.7 million lb (4,834 mt).

The 2016 benchmark assessment indicated that the black sea bass stock was not overfished and overfishing was not occurring in 2015, relative to the biological reference points. The average fishing mortality on

⁶ See the January 2013 SSC meeting report: <http://www.mafmc.org/s/SSC-Meeting-Report-January-30-2013.pdf>.

⁷ Carruthers, T, Punt, A, Walters, C, MacCall, A, McAllister, M, Dick, E, Cope, J. 2014. Evaluating methods for setting catch limits in data-limited fisheries. Fisheries Research. 153: 48 – 68.

⁸ Additional information regarding application to Mid-Atlantic species, including the Data Limited Techniques final report, code, presentation, and SSC subcommittee peer review report can be found at: <http://www.mafmc.org/ssc-meetings/2015/sept-16-17/>.

⁹ See 62nd Northeast Regional Stock Assessment Workshop (62nd SAW) Assessment Summary Report at <http://www.nefsc.noaa.gov/publications/crd/crd1701/crd1701.pdf>

¹⁰ NEFSC. 2012. 53rd Northeast Regional Stock Assessment Workshop Assessment Report. UD Dept. Comm. NEFSC Center Reference Document 12-05, 559p.

ages 4-7 (F_{4-7}) in 2015 was estimated at $F=0.27$, which is 25% below the fishing mortality threshold of $F=0.36$. Total spawning stock biomass in 2015 was estimated at 48.9 million lb (22,199 mt) which is 2.3 times above the target $SSB_{MSYproxy}$ of 21.3 million (9,667 mt) and 4.6 times higher than the biomass threshold $SSB_{MSYproxy}$ of 10.7 million lb (4,834 mt). Total January 1 stock biomass in 2015 was estimated at 70.7 million lb (32,061 mt).

Retrospective analysis on a number of population characteristics was conducted for the North and South sub-units separately. The North sub-unit model runs produced a retrospective pattern that tended to underestimate SSB and overestimate F; while the opposite was true for the South sub-unit model (i.e. the model tended to overestimate SSB and underestimate F). After an evaluation of cross plots showing the median F and SSB from the base run and retrospectively adjusted runs for both North and South sub-units separately, the retrospectively adjusted values were outside the base run values \pm two confidence intervals. Retrospective adjustments were then made to each sub-unit separately and then combined to produce reference points for one unit stock. Retrospective adjusted estimates produced a slightly higher F and significantly higher SSB in the 2015 terminal year estimates. The 2015 retrospective adjusted reference points did not change stock status; therefore, it was determined retrospective adjusted F and biomass (SSB) related reference points were most appropriate and are provided here.

Recruitment estimated by the model was relatively constant through the time series except for large peaks from the 1999 and 2011 year classes. Average recruitment from 1989 – 2015 equaled 24.3 million fish with the 1999 year class estimated at 37.3 million fish and the 2011 year class estimated at 68.9 million fish. Since 2012, recruitment has been average with the latest cohort (2014 year class) estimated to be 24.9 million fish. There is some evidence there may be a strong 2015 year class but additional catch and survey information is needed to determine its status.

Projections

Similar to the reference point calculations, projections were developed by summing each sub-unit specific projection and weighting the North-South ABC by catch proportions to create a unit stock projection. Retrospectively adjusted estimates in each sub-unit were also used to make projections. The 2017 – 2019 projections were calculated using a weighted iterative approach. The 2017 OFL projection is derived from the projected 2016 abundance and made under the assumption of fishing at the $F_{MSYproxy}$ ($F=0.36$) level. Since 2016 catch estimates were not yet available, it was assumed the 2016 catch equaled the 2016 ABC of 6.67 million lb (3,024 mt) and was apportioned to each sub-unit based on the 2013-2015 average catch for the sub-unit. To calculate the 2018 OFL estimate, it was assumed the 2017 catch equaled the 2017 ABC with updated weighting of the North-South catch proportions and assuming fishing at the $F_{MSYproxy}$. This approach is then applied for the 2019 OFL projections.

The 2016 benchmark black sea bass stock assessment included OFL projections for 2017-2019. Prior to the current assessment, the SSC did not accept the OFL derived from the assessment used at the time and used alternative methods to set the ABC for black sea bass; therefore, there are no OFL comparisons that can be made from the current assessment. OFL projections show a substantial increase in 2017 at 12.05 million pounds (5,467 mt). As the extremely large 2011 year class abundance declines, OFL projections for 2018 and 2019 also decline. The OFL in 2018 would be 10.29 million pounds (4,669 mt), a 14.6% decline from 2017, and the 2019 OFL would be 9.18 million pounds (4,163 mt), a 10.8% decline from 2018.

Staff ABC Recommendations for 2017-2019

Staff recommend that three year specifications be set for black sea bass, for the 2017 through 2019 fishing years. Due to the lack of an approved stock assessment for several years, specification setting has changed a number of times since 2012 and on a some-what ad-hoc basis as new information and approaches were obtained and developed. This assessment provides a new understanding of the black sea bass stock and represents the best scientific information available for management. Implementing multi-year specifications will help provide increased predictability in management for fishermen, as well as administrative time savings that allowed the Council and Board to focus efforts on other management priorities. Staff recommend that the SSC and Monitoring Committee may want to revisit and evaluate these specifications in the future, particularly for 2019, due to the declining abundance (and catch) of the 2011 year class, the potential strong 2015 year class, and the expected future availability of revised MRIP effort and catch time series.

The latest stock assessment was successful at evaluating, addressing and incorporating many of the concerns and greatest sources of uncertainty that had plagued prior stock assessments. The current assessment model, while not explicitly modelling stock mixing and exchange rates, separated the black sea bass stock and modelled two sub-units (North and South with a separation at approximately the Hudson Canyon) to account to biological and fishery differences between the two sub-units. The Council's risk policy is concerned with whether the atypical life history has been accounted for in the assessment or not. The assessment conducted a number of simulations to evaluate the unique life history (i.e. protogynous hermaphroditism) of black sea bass. Results highlight the contribution of secondary males and indicate the stock is more robust to exploitation than previously thought. As a result, SSB calculations were defined as male and female mature biomass. This evaluation supports the application of a typical life history approach in calculating the ABC. The SAW/SARC also evaluated the appropriateness and use of retrospectively adjusted estimates for making projections and approved these estimates as most appropriate and consistent application in other fisheries of other retrospectively adjusted estimates.

Staff recommend using the retrospective adjusted ABC projections and applying the Council risk policy assuming a species with a typical life history and using an OFL CV of not greater than 60%. The resulting ABC projections are shown in Table 3.

Table 3: ABC total catch, landings, discards, fishing mortality (F) and Spawning Stock Biomass (SSB) based on projections (2017-2019) from the 2016 benchmark black sea bass stock assessment¹¹. Projected catch, landings, discards, and SSB for 2017-2019 were calculated using an assumed typical life-history application and a 60% OFL CV.

Year	ABC Total Catch (mil lb)	ABC Total Catch (mt)	Landings (mil lb)	Landings (mt)	Discards (mil lb)	Discards (mt)	F	P* Value	SSB (mill b)	SSB (mt)
2016	6.67	3,024	5.53	2,510	1.13	514	0.27	n/a	41.11	18,647
2017	10.47	4,750	8.41	3,814	2.06	936	0.36	0.4	35.88	16,275
2018	8.94	4,057	7.18	3,258	1.76	799	0.36	0.4	31.29	14,183
2019	7.97	3,617	6.40	2,904	1.57	713	0.36	0.4	28.26	12,820

Other Management Measures

Recreational and Commercial Annual Catch Limits

As defined by the Omnibus ACLs and AMs Amendment (Amendment 15 to the Summer Flounder, Scup, and Black Sea Bass FMP), the ABC includes both landings and discards, and is equal to the sum of the commercial and recreational ACLs for black sea bass (Figure 1). The Monitoring Committee is responsible for recommending ACLs and ACTs derived from the ABC recommendations of the SSC. The catch projections provided by the Northeast Fisheries Science Center are not separated into projected landings and discards. Staff used data from the stock assessment to derive sector-specific ACL recommendations from the staff-recommended ABCs. Specifically, the recommended ABCs are apportioned into total landings and discards based on the 2013-2015 average which staff believes to be most representative of the current fishery. Based on this evaluation, the staff-recommended ABCs are apportioned into 80.3% landings and 19.7% discards.

Based on the allocation percentages in the FMP, 49% of the total allowable landings are allocated to the commercial fishery, and 51% to the recreational fishery. Discards are apportioned based on the contribution from each fishing sector using the most recent available three-year percentage contribution of discards by sector. Based on 2013-2015 discard data, 47.2% of discards were attributable to the commercial sector, and 52.8% to the recreational sector (Table 1). This updated discard information shows a much closer discard ratio between the commercial and recreational sector than previously calculated (for 2013-2014) which showed a 38% to 62% breakdown, respectively.¹² Recreational discards have remained relatively consistent from 2013 through 2015; while commercial discards increased significantly in 2014 and 2015, particularly in the North sub-unit trawl fishery.

¹¹ NEFSC (Northeast Fisheries Science Center). 2016. 62nd Northeast Regional Stock Assessment Workshop assessment summary report, prepublication draft.

¹² See the July 7, 2016 MAFMC staff memo at <http://www.mafmc.org/s/bsbquota-2017-memo.pdf>.

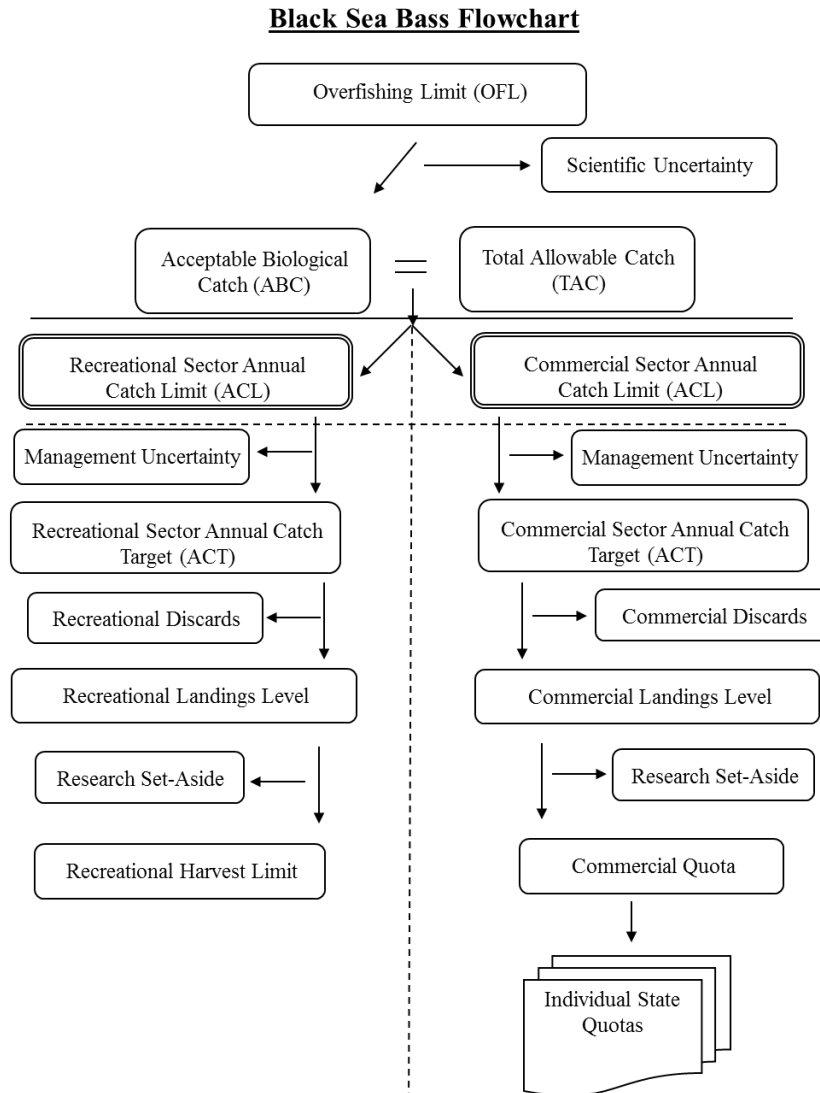


Figure 1: Flowchart for black sea bass catch and landings limits.

Annual Catch Targets

The Monitoring Committee is responsible for recommending Annual Catch Targets (ACTs), which are intended to account for management uncertainty, for the Council and Board’s consideration. The Monitoring Committee is responsible for considering all relevant sources of management uncertainty in the black sea bass fishery and providing the technical basis, including any formulaic control rules, for any reduction in catch when recommending an ACT. The ACTs, technical basis for ACT recommendations, and sources of management uncertainty should be described and provided to the Council. The relationships between the recreational and commercial ACTs and other catch components are given in Figure 1.

Management uncertainty is comprised of two parts: uncertainty in the ability of managers to control catch and uncertainty in quantifying the true catch (i.e., estimation errors). Management uncertainty can occur because of a lack of sufficient information about the catch (e.g., due to late reporting, underreporting,

and/or misreporting of landings or discards) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels).

The sector-specific landings performance in recent years indicates that the commercial landings have generally been near the commercial quotas for most of the past five years with less than a 2% difference between landings and the quota over this time period. The commercial quota monitoring system is timely and typically successful in constraining landings to the commercial quota. In contrast, the recreational fishery has generally exceeded its harvest limits in recent years, with periodic substantial overages (Table 4). The Monitoring Committee has noted that extremely high availability of black sea bass, largely due to a substantial 2011 year class, is resulting in recreational overages despite very restrictive management measures. In recent years, the Monitoring Committee has indicated that it would address recreational management uncertainty during the process for setting recreational measures in each year. Specifically, the Monitoring Committee has continued to address management uncertainty in the recreational fishery by re-evaluating the methodologies used to propose recreational measures and calculate effective recreational adjustments. The Monitoring and Technical Committees held a recreational data workshop in the fall of 2015 to review recreational data use and to develop tools to inform future recreational analyses. The Committees should continue to work to make improvements to the evaluation process for recreational measures. Staff recommend no reduction in catch from the recreational or commercial ACLs so that each sector’s ACT is set equal to the ACL.

Table 4: Black sea bass commercial and recreational fishery performance relative to quotas and harvest limits, 2011-2015.

Year	Commercial Landings (mil lb) ^a	Commercial Quota (mil lb)	Percent Overage(+)/ Underage(-)	Recreational Landings (mil lb) ^b	Recreational Harvest Limit (mil lb)	Percent Overage(+)/ Underage(-)
2011	1.69	1.71	-1%	1.17	1.78	-34%
2012	1.72	1.71	+1%	3.19	1.32	+142%
2013	2.26	2.17	+4%	2.46	2.26	+9%
2014	2.18	2.17	0%	3.67	2.26	+62%
2015	2.29	2.21	+4%	3.79	2.33	+63%
5-yr Avg.	-	-	+1.6%	-	-	+48.4%

^a Source: NMFS dealer data as of December 31, 2016. ^b Source: NMFS MRIP database through Wave 5 as of December 12, 2016; recreational landings north of Cape Hatteras, NC.

Commercial Quotas and Recreational Harvest Limits

Projected discards are removed to derive landings limits, which include annual commercial quotas and recreational harvest limits. The sum of the commercial quota and recreational harvest limit is equivalent to the total allowable landings in a given year. Based on the ABC and ACT recommendations above, after subtracting sector-specific projected discards, staff recommend a commercial quota of 4.12 million pounds (1,869 mt) in 2017, and a recreational harvest limit of 4.29 million pounds (1,945 mt) in 2017. Staff recommend a 2018 commercial quota of 3.39 million pounds (1,537 mt) and a 2018 recreational harvest limit of 3.53 million pounds (1,599 mt). Staff recommend a 2019 commercial quota of 2.94 million pounds (1,334 mt) and a 2019 recreational harvest limit of 3.06 million pounds (1,388 mt; Table 1).

As mentioned earlier in the memo, the NMFS published revised final 2017 specifications¹³ for black sea bass due to the commercial fishery exceeding the 2015 ACL. The commercial fishery exceeded the 2015 commercial landings quota by 3.8%; while discards were over three times higher than anticipated and accounted for 44.4% of the total commercial catch. This resulted in the ACL being exceeded and a reduction in the previously implemented 2017 ACT by nearly 850,000 pounds. As a result of this information, the Council initiated a framework to consider adding flexibility in the commercial black sea bass Accountability Measures (AMs) based on stock status.

The new stock assessment provides updated scientific information and a greater understanding of the black sea bass resource, particularly in 2015 and beyond. This new information provides a foundation to reevaluate the specifications that were in place in 2015 and its implications for 2017. Staff recommends that the NMFS not apply the overage in the 2015 commercial ACL to the 2017 commercial ACT for the following reasons:

- The 2015 specifications were derived without an approved stock assessment using a constant catch approach where an OFL could not be specified. This was a conservative approach and was overly restrictive in setting specifications at a time when the stock was rapidly growing and expanding due in large part to a strong 2011 year class.
- Due to the uncertainty regarding the fishery and resource at the time and without an assessment, a limited time series of data that did not include information about the 2011 year class was used to make projections and apportion the ABC between landings and discards. This did not allow for a full evaluation regarding the implications of the 2011 year class, which was at its peak in 2015, and appropriately project commercial sector discards in 2015.
- The newly approved stock assessment provides a much more comprehensive and robust picture regarding the sea bass stock in 2015 and represents best available science to guide management decisions.
 - The new assessment essentially creates a new baseline for developing new specifications. The 2017 projections and specifications are not linked to the previously implemented 2015 ABC and ACL specifications that were established under a different application using different methods and data.
- If the current assessment was available to set 2015 specifications, initial analysis indicates the 2015 ABC would have been more than double what was actually implemented.
 - The fishery has forgone yield with the restrictive quota that was in place for 2015. The 2015 commercial ACL would not have been exceeded using the new stock assessment information.
- 2015 is the terminal year of current assessment and indicates stock is not overfished and overfishing not occurring and this has been the stock status for the last five years.
 - SSB is estimated to be 2.3 times higher than the target and 4.6 times higher than the threshold.
 - Higher 2015 commercial discards, above those projected for the implemented 2015 ACL, were estimated and used in the assessment and did not impact the stock status.
- The stock assessment projections for 2017 also utilize the higher commercial discard amounts within the total catch estimates to produce the 2017 OFL.

¹³ <https://www.gpo.gov/fdsys/pkg/FR-2016-12-22/pdf/2016-30876.pdf>.

- The recent higher commercial discards estimated within the stock assessment, including 2015, are accounted for in the staff recommended 2017 ABC and commercial ACL. Under the staff recommended specifications, discards now account for a much greater portion of the ABC and in the commercial ACL for 2017. In fact, projected commercial discards for the updated 2017 specifications (970,000 pounds) are more than double those originally set for 2017 (440,000 pounds) using old data and methodologies.
- Therefore, implementing the 2015 ACL overage to reduce the 2017 ACT is in essence a double deduction of the overage.
- Discard estimates can be uncertain and variable for many species and there are discrepancies between different estimation methods that produce year specific discard estimates. This can create an uncertain process in which to develop one value/estimate to apply a deduction in the ACT and further evaluation is warranted.

The ASMFC allocates the commercial quota to each state based on the allocation percentages given in Table 4.

Table 3: The Commission state-by-state commercial allocation percentages.

State	Allocation (percent)
ME	0.5
NH	0.5
MA	13.0
RI	11.0
CT	1.0
NY	7.0
NJ	20.0
DE	5.0
MD	11.0
VA	20.0
NC	11.0
Totals	100

Recreational management measures (possession limits, size limits, and seasons) that will be used to achieve the harvest limit for the recreational fishery in 2017 are being developed in parallel to changes in catch and landings limits, with the intention of implementing new measures as soon as possible in 2017. Specific recreational measures cannot be recommended until a revised 2017 ABC and recreational harvest limit are recommended by the SSC and Monitoring Committee. However, staff are working to compile the information necessary to recommend recreational adjustments as soon as possible once an updated harvest limit recommendation becomes available. Updated MRIP data through wave 5, 2016 became available in mid-December 2016, and will be used to develop 2017 recreational measures. Preliminary data for the complete 2016 fishing year is expected to become available in February 2017 and may be used during the development of state waters measures, if applicable.

The Monitoring Committee will meet on January 26, 2017 to recommend commercial quotas and recreational harvest limits for 2017-2019, following the SSC's ABC recommendations. The Monitoring Committee will also review updated MRIP data for 2016, and to the extent possible, recommend any necessary changes in the recreational management. Given the performance of the recreational fishery

relative to the recreational harvest limit in recent years, management measures (i.e., minimum size, possession limits, and seasons) should be implemented that are designed to achieve the recreational harvest limit while preventing the recreational ACL from being exceeded. A separate memo describing updated recreational performance and possible recreational strategies for 2017 will be distributed to the Monitoring Committee prior to their meeting.

Commercial Gear Regulations and Minimum Fish Size

Management measures in the commercial black sea bass fishery, other than quotas and harvest limits (i.e., minimum fish size, gear requirements, etc.), have remained constant since 2007.

Amendment 9 in 1996 incorporated black sea bass into the Summer Flounder FMP, and established an initial minimum fish size of 9 inches total length as part of an effort to reduce fishing mortality on immature black sea bass and increase spawning stock biomass. The Council and Commission increased the commercial minimum size to 10 inches TL in 1998, and to 11 inches TL in 2002. The 11-inch minimum size has remained unchanged since 2002.

Amendment 9 also established gear regulations that became effective in December of 1996, and were modified in 1998 and again in 2002. Current regulations, unchanged since 2002, state that trawl vessels whose owners have a black sea bass moratorium permit and possess 500 pounds or more of black sea bass from January 1 through March 31, or 100 pounds from April 1 through December 31 (i.e., the threshold or incidental possession limits), must fish with nets that have a minimum mesh size of 4.5-inch diamond mesh applied throughout the codend for at least 75 continuous meshes forward of the terminus of the net. For codends with less than 75 meshes, the entire net must have a minimum mesh size of 4.5-inch diamond mesh.

The Council and Commission adopted modifications to the circle vent size in black sea bass pots/traps, effective in 2007, based on the findings of a Council and Commission sponsored workshop. The minimum circle vent size requirements for black sea bass pots/traps were increased from 2.375 inch to 2.5 inch. The requirements of 1.375 inch x 5.75 inch for rectangular vents and 2 inch for square vents remained unchanged. In addition, 2 vents are required in the parlor portion of the pot/trap.

In the fall of 2015, the Council and Commission's Monitoring and Technical Committees conducted a thorough review of current commercial management measures. The Committees, and subsequently the Council and Board, indicated that further exploration of some of these measures may be justified. Specifically, for black sea bass, this included assessing the feasibility of a common minimum mesh size for summer flounder, scup, and black sea bass, as well as summarizing past studies on mesh sizes and pot/trap configuration requirements for all three species. Stemming from this discussion, the Council funded a proposal received under the Council's 2016-2017 Collaborative Fisheries Research Program. This project proposes to analyze the selectivity of multiple codend mesh sizes relative to summer flounder, black sea bass and scup retention in the commercial bottom trawl fishery in the Mid-Atlantic region.¹⁴ The results of this study should be available in mid-2017 and may inform future consideration of adjustments to the black sea bass, scup, and/or summer flounder mesh sizes. At this time, staff do not recommend any changes to the current commercial measures, including the 11-inch minimum fish size, seasonal mesh size requirements and thresholds (4.5-inch mesh with 500 lb trigger from January-March

¹⁴ Proposal and background documents available at: <http://www.mafmc.org/collaborative-research/>.

and 100 lb trigger from April-December), or other gear requirements (current pot/trap vent requirements detailed above).