



Mid-Atlantic Fishery Management Council
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MEMORANDUM

Date: August 20, 2019
To: Dr. Chris Moore, Executive Director
From: Matthew Seeley, Staff
Subject: 2020-2021 Bluefish Specifications

Executive Summary

An assessment update for bluefish was peer reviewed in early August 2019. The assessment incorporates data through 2018, including the recently revised (calibrated) time series (1985-2018) of recreational catch provided by the Marine Recreational Information Program (MRIP).¹

Interim 2020 catch and landings limits for bluefish (Table 1) were adopted by the Council and Board in March 2019, intended to serve as a placeholder until the 2019 operational assessment is peer reviewed and used to develop management measures. The interim measures currently implemented for 2020 include an Acceptable Biological Catch (ABC) of 21.81 million lbs or 9,895 mt. Now that the assessment update is complete, the Scientific and Statistical Committee (SSC) should recommend 2020-2021 ABCs, for the Council and Atlantic States Marine Fisheries Commission's (Commission) Bluefish Board (Board) to consider at their joint October 2019 meeting.

Similarly, the Monitoring Committee (MC) should review recent fishery performance and make a recommendation to the Council and Board regarding 2020-2021, Annual Catch Targets (ACTs), Total Allowable Landings (TALs), commercial quotas, and recreational harvest limits (RHLs).

This memo provides recommendations for setting bluefish specifications for two years (2020-2021). For 2020 and 2021, staff recommends an Acceptable Biological Catch (ABC) of 20.92 million pounds (9,489 mt).

¹ In July 2018, MRIP released revisions to their time series of recreational catch and landings estimates based on adjustments for a revised angler intercept methodology and a new effort estimation methodology (i.e., a transition from a telephone-based effort survey to a mail-based effort survey). The revised, or calibrated, estimates of catch and landings for most years are several times higher than the previous estimates for shore and private boat modes, substantially raising the overall bluefish catch and harvest estimates.

Table 1. Interim 2020 specifications for bluefish (in millions of pounds and metric tons) drafted as status quo from 2019.

Management Measure	2020 (Interim)		Basis
	mil lb. ²	mt	
Overfishing Limit (OFL)	27.97	12,688	Stock assessment projections
ABC	21.81	9,895	Derived by SSC, based on Council risk policy (2019)
ACL	21.81	9,895	Defined in FMP as equal to ABC
Commercial ACT	1,682	3.71	(ACL – Management Uncertainty) x 17%
Recreational ACT	8,213	18.11	(ACL – Management Uncertainty) x 83%
Commercial Discards	0	0	Value used in assessment
Recreational Discards	1,129	2.49	2017 discards
Commercial TAL	1,682	3.71	Commercial ACT – commercial discards
Recreational TAL	7,083	15.62	Recreational ACT – recreational discards
Expected Recreational Landings	4,318	9.52	2017 Recreational landings
Transfer	1,814	4.00	Proposed by the Council via a motion
Commercial Quota	3,497	7.71	Commercial TAL + transfer
RHL	5,271	11.62	Recreational TAL – transfer

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 achieving maximum sustainable yield. The Council's catch limit recommendations for the upcoming fishing year(s) cannot exceed the ABC recommendation of the SSC. In addition, the MC established by the Fishery Management Plan (FMP) is responsible for developing recommendations for management measures designed to achieve the recommended catch limits. The SSC recommends ABCs that addresses scientific uncertainty, while the MC recommends ACTs that address management uncertainty and management measures to constrain catch to the TALs.

In early 2019, the Council/Board adopted recommendations for interim 2020 catch and landings limits for bluefish, with the expectation that these limits would be revisited in early 2020 based on the results of the new assessment update.

Both the SSC and MC will review these 2020 measures and recommend measures for 2020-2021. The Council and the Commission's Bluefish Board will meet jointly to consider these recommendations in October 2020.

² Interim specifications are based on BASE “old” MRIP estimates.

The SSC should consider recommending either constant 2-year ABCs (using the standard risk policy application) or average ABCs from 2020-2021 based on recent adjustments to the Council's risk policy that allow for multi-year ABC averaging.

On April 11, 2018, the final rule published implementing the Omnibus ABC Framework Adjustment (Framework 3 to the Bluefish FMP; 83 FR 15511). This framework adjustment allows the SSC to specify constant multi-year ABCs if the average of the probabilities of overfishing meet the Council's risk policy goals and if the resulting ABC always results in less than a 50% probability of overfishing in any one year. Additional considerations and recommendations for ABC averaging are described in the "Staff ABC Recommendations" section of this memo.

Recent Catch and Landings

Commercial and recreational (revised MRIP data) landings and dead discards 1994-2018 are shown in Figure 1.

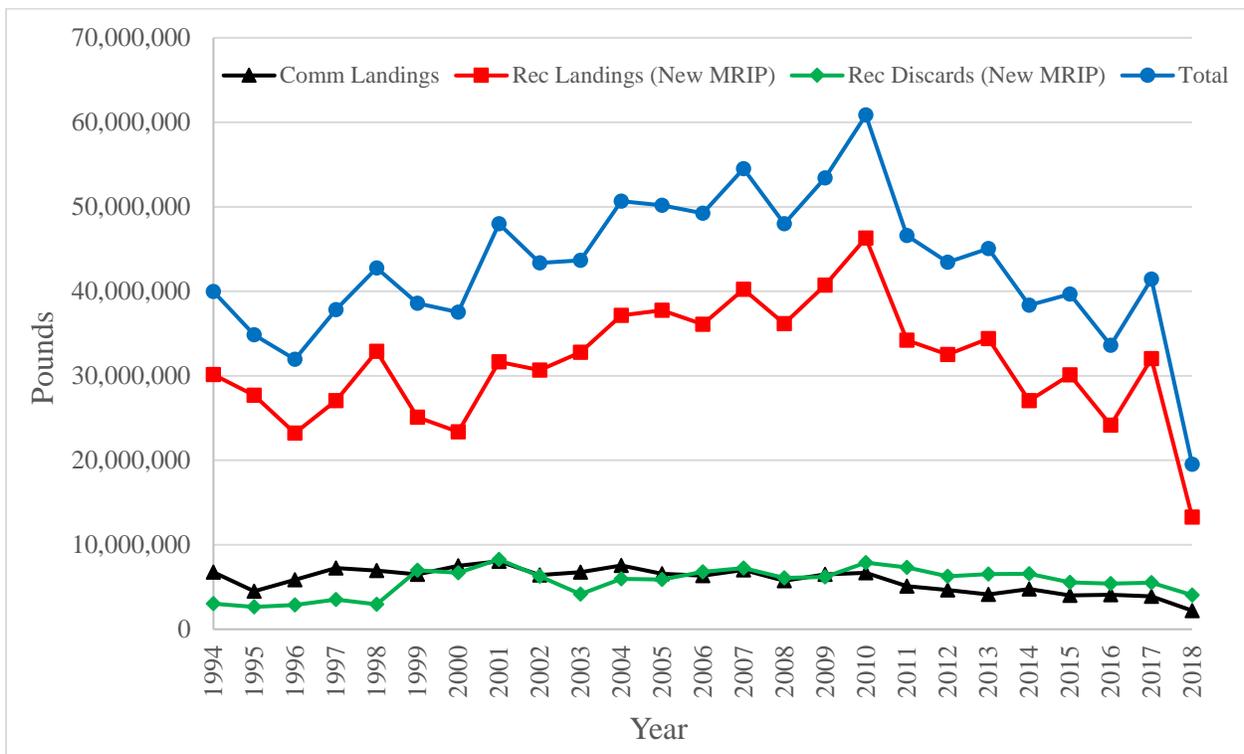


Figure 1. Bluefish catch components 1994-2018 including the revised MRIP time series for recreational data.

New MRIP recreational landings decreased by approximately 59% from 2017 to 2018 (32.02 million pounds to 13.27 million pounds) and reported the lowest recreational landings for the time series in 2018. This coincides with effort, as the number of recreational trips in 2018 (5,749,291) is the lowest reported in the time series.

Commercial landings decreased by approximately 40% from 2017 to 2018 (3.64 million pounds to 2.20 million pounds). This decrease led to the lowest recorded landings in the commercial time series. Landings were broken down with the following gear: gillnet (50%), followed by unknown gear (26%), otter trawl/bottom fish (9%), other (9%) and handline (6%). Commercial (and recreational) landings by state are available in Table 2.

Table 2. 2018 recreational (New and Old MRIP estimates) and commercial landings by state.

State	“New” Recreational Landings	“Old” Recreational Landings	Commercial Landings
ME	0	0	29
NH	0	0	0
MA	611,557	328,240	195,402
RI	210,033	119,961	237,182
CT	340,666	238,815	48,220
NY	1,399,517	425,036	539,345
NJ	2,007,110	613,605	56,210
DE	315,105	238,815	6,486
MD	493,192	152,459	27,353
VA	264,534	70,549	102,630
NC	2,630,685	767,364	765,764
SC	403,141	93,814	0
GA	70,284	10,551	0
FL	4,525,038	741,516	224,999
Total	13,270,862	3,639,697	2,203,620

Review of Prior SSC Recommendations

In July 2018, the SSC recommended to carry forward its 2018 ABC recommendation for 2019, as the SSC was not provided any new stock projections and recent catches remained consistent with previous projections. To make this recommendation, the SSC reviewed 2017 fishery performance, the 2017 data update, and materials from the SAW 60 benchmark assessment. Additionally, in February 2019, the SSC recommended status quo specifications for the interim 2020 measures until the results of the 2019 operational assessment.

To derive the 2018 ABC, a CV of 60% was applied to the OFL to reflect the much-improved treatment of uncertainty in the current bluefish assessment. Three-year specifications were required (at the time). The OFL level for 2016 was determined by using $F_{35\%}=0.19$. The equilibrium catch (a proxy for MSY) under this scenario is 31.84 million lbs (14,443 mt). The SSB_{msy} is therefore 223.42 million lbs (101,343 mt) and $SSB_{2014} = 190.78$ million lbs (86,534 mt), so the $SSB/SSB_{msy}=0.85$, with an SSB threshold of 111.71 million lbs (50,672 mt). The SSC applied the Council policy of $P^* = 0.307$ in 2016. This resulted in ABCs of:

2016: 8,825 mt ($P^* = 0.307$)
2017: 9,363 mt ($P^* = 0.328$)
2018: 9,895 mt ($P^* = 0.327$)

The 2019 ABC recommendation was status quo from 2018.

2019: 9,895 mt ($P^* = 0.327$)

The SSC considered the following to be the most significant sources of uncertainty associated with the determination of the OFL and ABC (July 2018 SSC Report):

- The SSC-recommended ABC is based on rolling over a projection from 2016 for 2018 for an additional year.
- Uncertainty in the stock recruitment relationship adds to uncertainty in appropriate reference points.
- The uncertainty in MRIP sampling overall, which is the most influential data in the assessment. Questions have been raised about the uncertainty in the historical MRFSS/MRIP estimates in general and are particularly relevant here given the highly episodic nature of Bluefish catches in the recreational fisheries coast wide.
- Approximately 60% of the population biomass is in the aggregated 6+ age group for which there is relatively little information.
- Commercial discards are assumed to be insignificant, which may not be the case.

Stock Status and Biological Reference Points

Projections

In August 2019, a bluefish operational assessment, which included revised bluefish MRIP estimates through 2018 changed the stock status and biological reference points from SAW 60, which utilized data through 2014. All information from this operational assessment were and should be interpreted as preliminary results until publication of the final report.

The biological reference points for bluefish revised through the 2019 operational assessment include a fishing mortality threshold of $F_{MSY} = F_{35\%}$ (as the F_{MSY} proxy) = 0.183, and a biomass reference point of $SSB_{MSY} = SSB_{35\%}$ (as the SSB_{MSY} proxy) = 438.10 million lbs (198,717 mt). The minimum stock size threshold ($1/2 SSB_{MSY}$), is estimated to be 219.05 million lbs (99,359 mt); Table 3. SSB in 2018 was 200.71 million lbs (91,041 mt) (Figure 2).

Operational assessment results indicated that the bluefish stock was overfished and overfishing was not occurring in 2018 relative to the biological reference points. Fishing mortality on the fully selected age 2 fish was 0.146 in 2018, 80% of the updated fishing mortality threshold reference point F_{MSY} proxy = $F_{35\%} = 0.183$ (Figure 3). There is a 90% probability that the fishing mortality rate in 2018 was between 0.119 and 0.205.

Table 3. Summary of changes in biological reference points and terminal year SSB and F estimates resulting from the SAW/SARC 60 process.

	SAW/SARC 60 (2015) Biological Reference Points and most recent update stock status results (data through 2014)	Bluefish Operational Assessment (2019) Biological Reference Points and stock status results (data through 2018)
Stock Status	Not Overfished, Not Overfishing	Overfished, Not Overfishing
SSB_{MSY}	223.42 million lbs (101,343 mt)	438.10 million lbs (198,717 mt)
½ SSB_{MSY}	111.71 million lbs (50,672 mt)	219.05 million lbs (99,359 mt)
Terminal year SSB	2014: 258.76 million lbs (86,534 mt) 85% of SSB _{MSY}	2018: 200.71 million lbs (91,041 mt) 46% of SSB _{MSY}
F_{MSY}	0.190	0.183
Terminal year F	2014: 0.157 83% of F _{MSY}	2018: 0.146 80% of F _{MSY}

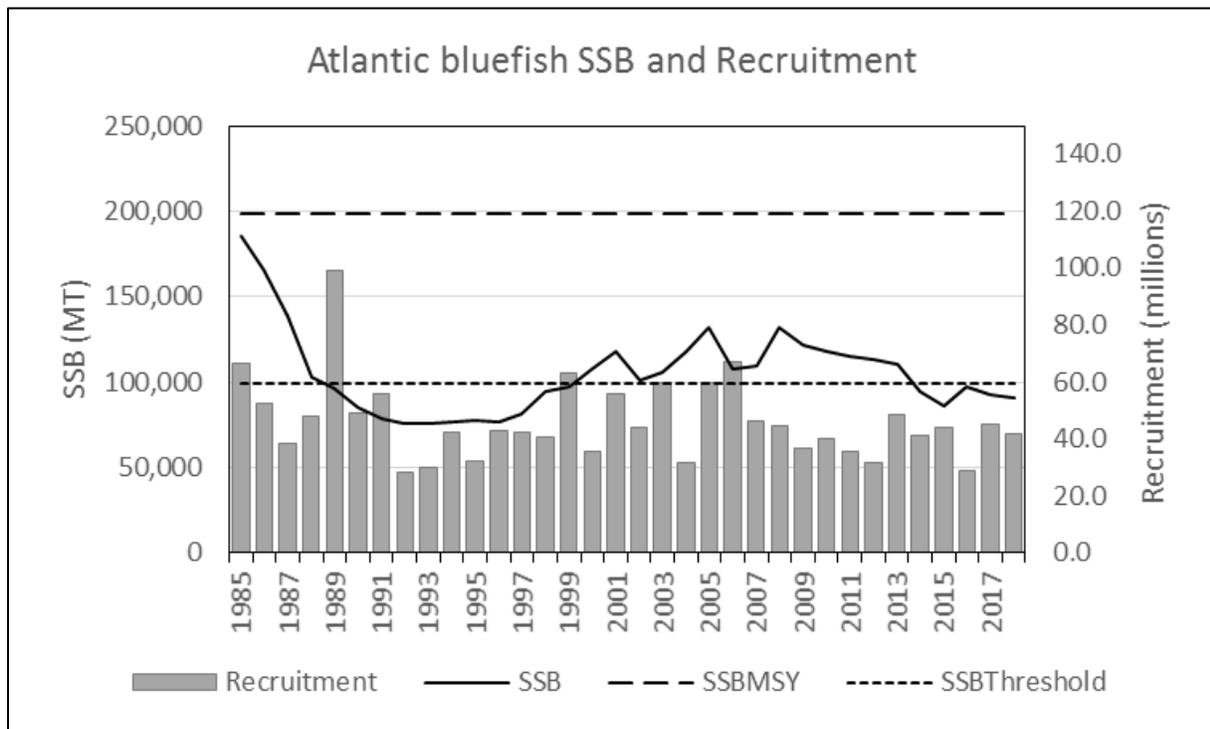


Figure 2. Atlantic bluefish spawning stock biomass (SSB; solid black line) and recruitment at age 0 (R; gray vertical bars) by calendar year. The horizontal dashed line is the updated SSB_{MSY} proxy = SSB_{40%} = 198,717 mt, and the dotted black line is the SSB_{Threshold} = 99,359 mt.

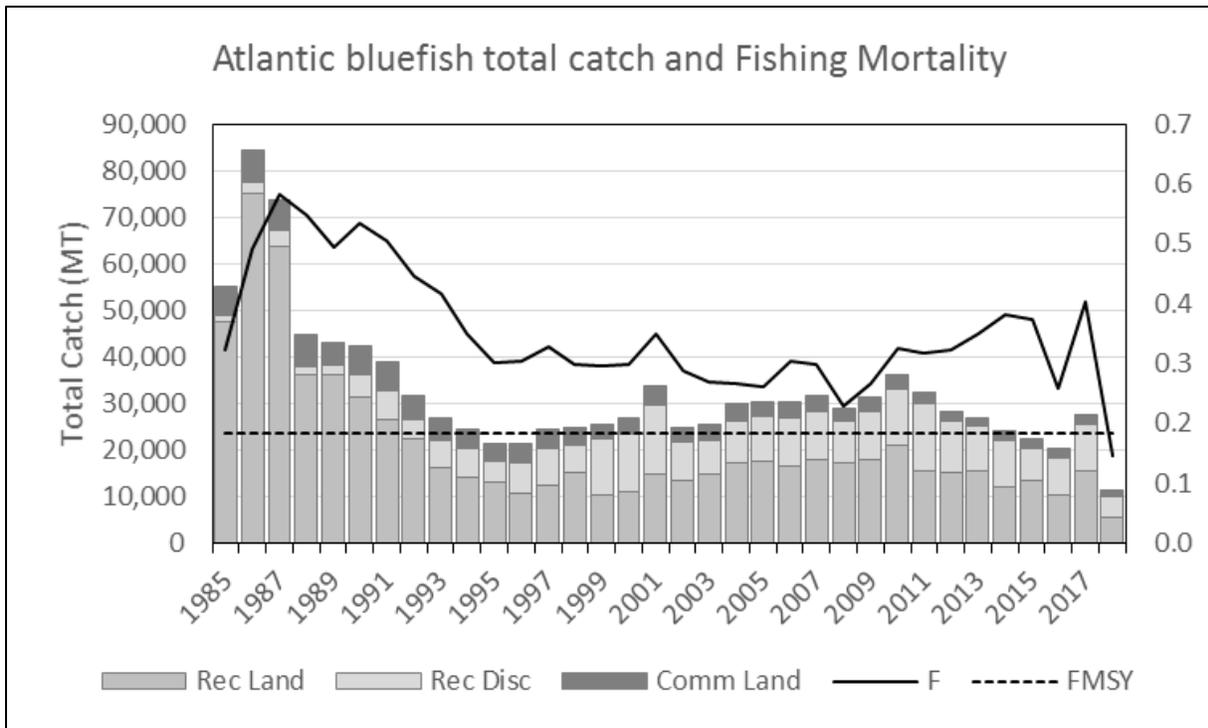


Figure 3. Total fishery catch (metric tons; mt; solid line) and fishing mortality (F, peak at age 3; squares) for Atlantic bluefish. The horizontal dashed line is the updated F_{MSY} proxy = $F_{35\%} = 0.183$.

The bluefish stock has experienced a decline in SSB over the past decade, coinciding with an increasing trend in F. Recruitment has remained fairly steady, fluctuating just below the time-series mean of 46 million fish. Both commercial and recreational fisheries had poor catch in 2016 (44.91 million lbs or 20,370 mt), and 2018 (24.89 million lbs or 11,288 mt), resulting in the second lowest and lowest catches on record, respectively. As a result of the very low catch in 2018, fishing mortality was estimated below the reference point for the first time in the time-series. These lower catches are possibly a result of availability. Anecdotal evidence suggests larger bluefish stayed offshore and inaccessible to most of the recreational fishery during these two years (Wood 2019).

Staff Recommendations for 2020-2021 ABCs

For 2020 and 2021, staff recommends adopting the average (Table 4B) ABC of 20.92 million pounds (9,489 mt) based on the projections developed from the 2019 bluefish operational assessment (Table 4). Biologically, the variable vs. averaged approaches are similar, resulting in comparable P* values and projected stock biomass at the end of the two years. Staff recommends the average approach because it offers consistency for a fishery that is predominantly dictated by MRIP estimates. Additionally, the probability of overfishing decreases from 2020-2021 while increasing SSB by approximately 10,000 mt per year. Furthermore, consistent ABCs offer stability in a fishery that is currently overfished and scheduled for a research track (benchmark) assessment in 2022.

Table 4. 2019 Bluefish Operational Assessment ABC Projections for 2020-2021. The projections assume the 2019 ABC of 9,897 mt with recreational catch in ‘New’ MRIP equivalents will be taken in 2019, providing an estimated catch of 22,614 mt in 2019. OFL Total Catches are catches in each year fishing at FMSY = 0.183, prior to calculation of the associated annual ABC. The projections sample from the estimated recruitment for 1985-2018 and use the MAFMC standard risk policy with OFL CV = 60%.

A Not Staff Recommended - <u>Annual ABC 2020-2021</u>					
Total Catch, Landings, Discards, Fishing Mortality (F) and Spawning Stock Biomass (SSB)					
Catches and SSB in metric tons					
Year	OFL Total Catch	ABC Total Catch	ABC F	ABC P* value	ABC SSB
2019	15,373	22,614	0.279	0.757	92,773
2020	14,956	8,676	0.103	0.163	101,527
2021	17,019	10,301	0.108	0.183	112,187

B Staff Recommended - <u>Average ABC 2020-2021</u>					
Total Catch, Landings, Discards, Fishing Mortality (F) and Spawning Stock Biomass (SSB)					
Catches and SSB in metric tons					
Year	OFL Total Catch	ABC Total Catch	ABC F	ABC P* value	ABC SSB
2019	15,373	22,614	0.279	0.757	92,773
2020	14,956	9,489	0.113	0.206	101,124
2021	16,889	9,489	0.100	0.149	111,617

2020-2021 Sector-Specific Catch and Landings Limits

As defined by the Omnibus ACLs and AMs Amendment (Amendment 3 to the Bluefish FMP), the ABC includes both landings and discards, and is equal to the ACLs for bluefish (Figure 4). Based on the allocation percentages in the FMP, 83% of the ACT is allocated to the recreational fishery, and 17% to the commercial fishery.

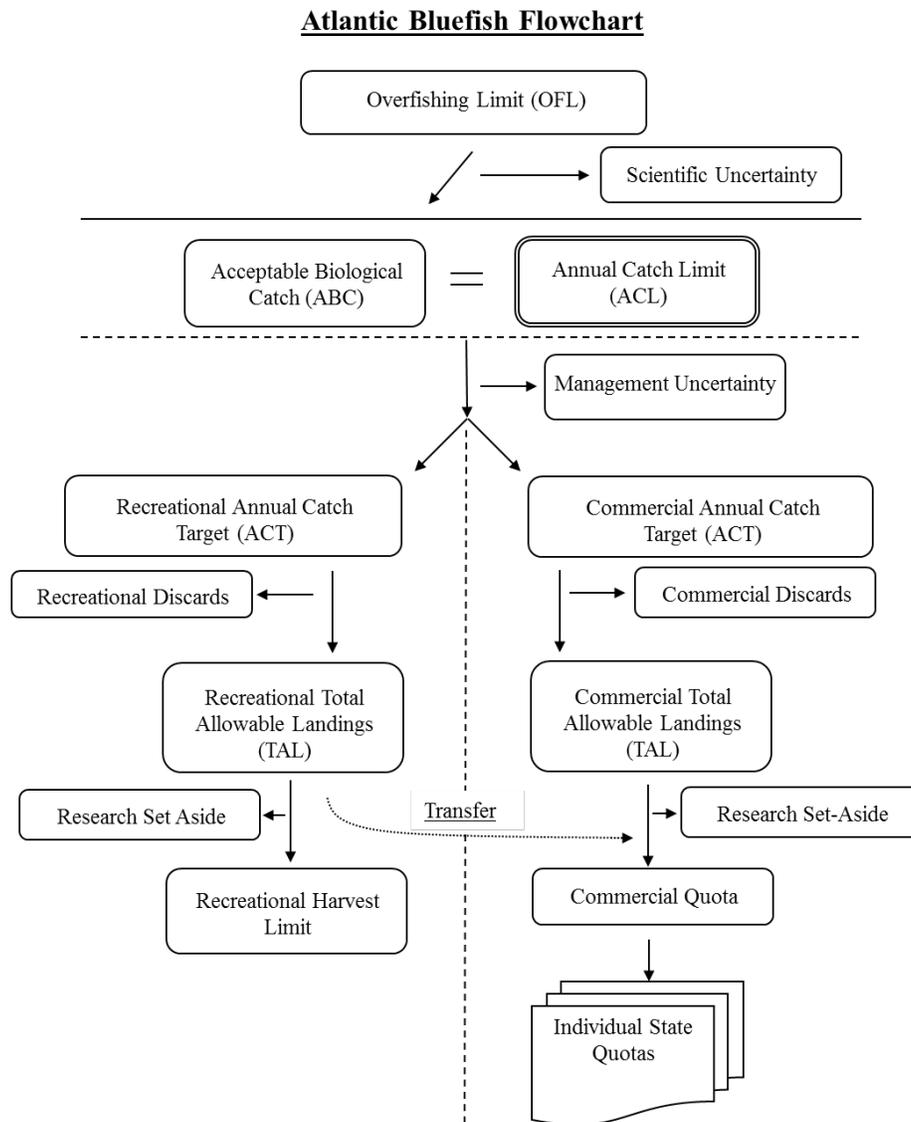


Figure 4. Bluefish specification process as described in Amendment 3 to the Bluefish FMP.

The MC is responsible for recommending ACTs TALs, which are intended to account for management uncertainty and estimated discards, for the Council and Board’s consideration, as well as any other associated management measures. The MC is responsible for considering all relevant sources of management uncertainty in the bluefish fishery and providing the technical basis, including any formulaic control rules, for any reduction in catch when recommending an ACT and TAL.

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 bycatch) or because of a lack of management precision (i.e., the ability to constrain catch to desired levels). Table 5 includes the staff recommended ACTs/TALs and associated management measures identified using the 2020-2021 ABC projections of 20.92 million lbs (9,489 mt).

Table 5. Current fishing year specifications (2019) and 2020-2021 staff recommended specifications for bluefish.

Management Measure	2019 (Current Measures set in 2018)		Basis for 2020-2021 Staff Recommendation	2020-2021 (Staff recommended)	
	M lbs	mt		M lbs	mt
ABC	21.81	9,895	Derived by SSC; Council P* policy	20.92	9,489
ACL	21.81	9,895	Defined in FMP as equal to ABC	20.92	9,489
Management Uncertainty	0	0	Derived by MC	0	0
Commercial ACT	3.71	1,682	(ACL – Mgmt. Uncertainty) x 17%	3.56	1,613
Recreational ACT	18.11	8,213	(ACL – Mgmt. Uncertainty) x 83%	17.36	7,876
Commercial Discards	0	0	Value used in assessment	0	0
Recreational Discards	2.99	1,356	2018 Discards – MRIP estimated	4.03	1,829
Commercial TAL (pre-transfer)	3.71	1,682	Comm ACT – Comm Discards	3.56	1,613
Recreational TAL (pre-transfer)	15.12	6,857	Rec ACT – Rec Discards	13.33	6,047
TAL Combined	18.83	8,539	Comm TAL + Rec TAL	16.89	7,660
Transfer	4.00	1,814	Make RHL equal Expected Rec Landings (unless already exceeded)	0	0
Expected Rec Landings	11.58	5,253	2018 Rec Landings	13.27	6,020
Commercial quota	7.24	3,286	Comm TAL + Transfer	3.56	1,613
Recreational harvest limit	11.58	5,253	Rec TAL - Transfer	13.33	6,047

References

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Northeast Fisheries Science Center (NEFSC). 2015. 60th Northeast Regional Stock Assessment Workshop (60th SAW) Assessment Report. US Dept Commerce, Northeast Fish Sci Cent Ref Doc. 15-08; 870 p.

Wood, Anthony. 2019. Draft Atlantic Bluefish Operational Assessment for 2019. Northeast Fisheries Science Center. Woods Hole, MA.