

TAUTOG BOARD MEETING
October 2016

Provide Plan Development Team Guidance on Draft Amendment 1

The Tautog Plan Development Team is writing Draft Amendment 1 and seeks Board guidance on regional reference point determinations and projection timeframes, as described below.

Issue 1	Reference Points (Refer to Table 1a & 1b)
Background	<p>The tautog benchmark assessments proposed different types of reference points for different regions.</p> <p>Because longer, more robust data series exist for states in the northern range, the TC was able to calculate maximum sustainable yield (MSY) based reference points for the MARI and LIS regions. This approach uses a combination of spawning potential ratio (SPR), yield-per-recruit (YPR), and the stock-recruitment relationship to calculate the SSB and F targets, SSB_{MSY} and F_{MSY}. The F threshold, $F_{75\%MSY}$, was calculated by projecting the population forward assuming the same stock-recruitment (S-R) relationship and finding the fishing mortality (F) that maintains the population at the SSB threshold, 75% SSB_{MSY}.</p> <p>MSY-based reference points are generally preferred for management, since they incorporate information on the relationship between spawning stock biomass and future recruitment, while SPR-based reference points assume recruitment will remain constant regardless of SSB size. However, MSY-based reference points require a reliable stock-recruitment relationship.</p> <p>The assessment proposed SPR-based reference points for NJ-NYB and DelMarVa regions because the shorter time-series of the data resulted in unrealistic estimates of steepness for the stock-recruitment relationship. The F target was defined as $F_{40\%SPR}$ and the F threshold was defined as $F_{30\%SPR}$. The corresponding SSB target and threshold, $SSB_{40\%}$ and $SSB_{30\%}$ were calculated by projecting the population forward until equilibrium was reached while fishing at the F target or threshold with recruitment randomly drawn from the observed historical recruitment.</p> <p>For the LIS region, the MSY-based reference points were very similar to the SPR-based reference points, and stock status was not changed. For the MARI region, the SPR-based F reference points were higher than the MSY-based reference points and the SPR-based reference points were lower (Table 1a).</p>

Technical Committee Recommendation	<ol style="list-style-type: none"> 1. MSY-based reference points are recommended by the TC for the MARI and LIS regions and coastwide. <ol style="list-style-type: none"> a. Targets: SSB_{MSY} and F_{MSY} b. Thresholds: 75% SSB_{MSY} and $F_{75\%MSY}$ 2. SPR-based reference points are recommended by the TC for the NJ-NYB and DeMarVa regions. <ol style="list-style-type: none"> a. Targets: $F_{40\%SPR}$ and $SSB_{40\%}$ b. Thresholds: $F_{30\%SPR}$ and $SSB_{30\%}$
Board Guidance Sought	Does the Board approve the reference points as recommended by the TC?

Table 1a. Regional Stock Status

Stock Region	MSY or SPR	SSB Target (mt)	SSB Threshold (mt)	SSB 2015 (mt)	F Target	F Threshold	F 3-year Avg (2013-15)	Stock Status
MARI	MSY	3,631	2,723	2,196	0.14	0.28	0.23	Overfished, Overfishing not occurring
	SPR	2,684	2,004	2,196	0.28	0.49	0.23	Stock not overfished, Overfishing not occurring
LIS	MSY	2,865	2,148	1,603	0.28	0.49	0.51	Overfished, Overfishing
	SPR	2,980	2,238	1,603	0.27	0.46	0.51	Overfished, Overfishing
NJ-NYB	SPR	3,154	2,351	1,809	0.20	0.34	0.54	Overfished, Overfishing
DelMarVa	SPR	1,919	1,447	621	0.16	0.24	0.16	Overfished, Overfishing not occurring

Table 1b. Coastwide Stock Status

Stock Region	MSY or SPR	SSB Target (mt)	SSB Threshold (mt)	SSB 2015 (mt)	F Target	F Threshold	F 3-year Avg (2013-15)	Stock Status
Coastwide	MSY	14,944	11,208	6,014	0.17	0.24	0.38	Overfished, Overfishing
	SPR	9,448	7,091	6,014	0.25	0.43	0.38	Overfished, Overfishing not occurring

Issue 2	Short-term Projections to Reduce F (Refer to Tables 2.1-5)
Background	The assessment update conducted short term (2016-2020) projection scenarios to determine constant harvest levels that would result in 50% chance and 70% chance of achieving the regional F targets in 2020, as well as to project trends under status quo removals.
Technical Committee Recommendation	The TC does not have a recommendation because the probability of achieving F target is a management decision. The probability of achieving F target that is chosen will be used to determine the harvest reduction options that will be included in Draft Amendment 1, therefore a decision at the Annual Meeting is preferred.
Board Guidance Sought	Does the Board want the regional projections to incorporate a 50% or a 70% probability of achieving F target by 2020?

Table 2.1 MARI region short-term projection results

MSY	MARI MSY Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (390 mt)	0%	0.00%
	151 mt	50%	2.20%
	148 mt	70%	2.30%

SPR	MARI SPR Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (390 mt)	0%	4.10%
	257 mt	50%	23.2%
	253 mt	70%	24.3%

Table 2.2 LIS region short-term projection results

MSY	LIS MSY Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (500 mt)	1.70%	0.60%
	264 mt	50%	34%
	237 mt	70%	40%

Table 2.2 continued. LIS region short-term projection results

SPR	LIS SPR Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (500 mt)	0%	0.60%
	255 mt	50%	28%
	229 mt	70%	33%

Table 2.3 NJ-NYB region short-term projection results

SPR	NJ-NYB SPR Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (461 mt)	45%	85%
	450 mt	50%	86%
	410 mt	70%	88%

Table 2.4. DelMarVa region short-term projection results

SPR	DelMarVA SPR Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F Target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (77 mt)	100%	18%
	139 mt	50%	10%
	125 mt	70%	12%

Table 2.5 Coastwide short-term projection results

MSY	Coastwide MSY Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (1270)	0%	0.6%
	737 mt	50%	0.9%
	682 mt	70%	1.0%

SPR	Coastwide SPR Reference Points		
	2018-2020 Landings Scenario	Probability of being at or below F target in 3 years	Probability of being at or above SSB threshold in 3 years
	Status quo (1270)	3%	29.4%
	968 mt	50%	50.2%
	895 mt	70%	55.3%

Issue 3	Rebuilding Plan
<p>Background</p>	<p>The short-term projection scenarios address overfishing by reducing removals (see Issue 2). Given each region is overfished, the Board can also consider a SSB rebuilding plan. The following regions have a less than 40% chance of achieving the SSB threshold in 2020 with the proposed harvest reductions: MARI (MSY & SPR), LIS (MSY & SPR), DelMarVA and coastwide (MSY).</p> <p>The Board can establish a rebuilding plan that focuses on increasing stock abundance to achieve SSB target or threshold. To establish stock rebuilding projections the Board would need to task the TC to begin this work, as well as provide the following information:</p> <ul style="list-style-type: none"> - Does the Board want to rebuild to SSB_{target} or $SSB_{threshold}$ - Specify a rebuilding timeframe (e.g. 10 years) - Specify the probability of achieving SSB threshold (e.g. 80%, 100%) -
<p>Board Guidance Sought</p>	<p>Does the Board want to establish a SSB rebuilding plan?</p>