ABC below Max
Joint Plan Team
Nov 13, 2018
AFSC Seattle

SSC guidance from October 2018 Minutes

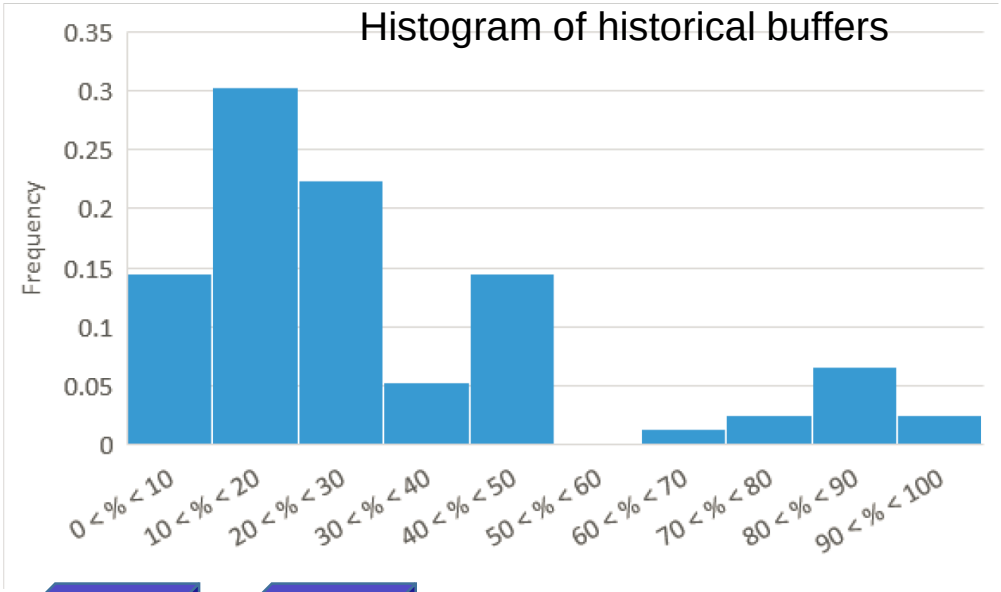
- The SSC recommends that economic considerations should NOT contribute to ABC reductions, but should instead be considered during the TAC setting process*.
- The SSC recognized the considerable effort expended in summarizing and characterizing reasons for the large number of historical ABC reductions. The predictability of these reductions was then tested through a multivariate logistic modeling approach. Although it provided a valuable historical perspective, the SSC recommends not pursuing this analysis further.
- A distribution-based approach to risk (P*) fundamentally relies on all sources of uncertainty (including structural) being explicitly captured in the distribution. While this may be possible in some cases, it is rare that the factors influencing ABC reductions are completely quantified in an assessment.
- The SSC supports future consideration and development of distribution-based approaches, but not as a priority for 2018.

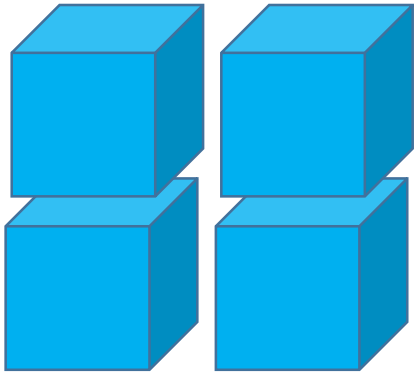
*Needs to be clarified with respect to econ component of ESPs

SSC guidance from October 2018 Minutes

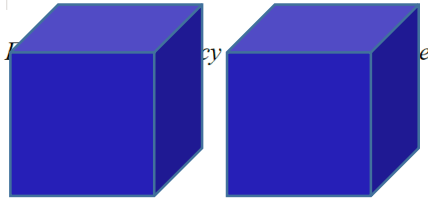
- The risk matrix approach (i.e., Table 1 of the workshop report) is a clear classification of degree and basis for any potential reduction.
- Although assignment to a specific cell in this matrix will be subjective, clearly delineating the categories should improve transparency and help the PTs and SSC structure future decisions.
- The SSC recommends that this approach be used qualitatively (not from the example percentages presented in Table 2) in December if any reductions to the ABC are recommended (but please drop the emojis). 

Grant's clever idea:

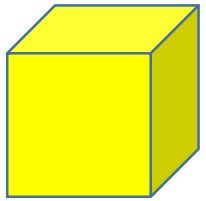




Category 2: 15% buffer



Category 3: 35% buffer



Category 4: 80% buffer

Table 1. Risk classification matrix for assessment, population dynamics, and environmental/ecosystem considerations

	Assessment-related considerations	Population dynamics considerations	Environmental/ecosystem considerations
Level 1: Normal	Typical to moderately increased uncertainty/minor unresolved issues in assessment	Stock trends are typical for the stock; recent recruitment is within normal range.	No apparent environmental/ecosystem concerns
Level 2: Substantially increased concerns	Substantially increased assessment uncertainty/ unresolved issues.	Stock trends are unusual; abundance increasing or decreasing faster than has been seen recently, or recruitment pattern is atypical.	Some indicators showing an adverse signals but the pattern is not consistent across all indicators.
Level 3: Major Concern	Major problems with the stock assessment, very poor fits to data, high level of uncertainty, strong retrospective bias.	Stock trends are highly unusual; very rapid changes in stock abundance, or highly atypical recruitment patterns.	Multiple indicators showing consistent adverse signals a) across the same trophic level, and/or b) up or down trophic levels (i.e., predators and prey of stock)
Level 4: Extreme concern	Severe problems with the stock assessment, severe retrospective bias. Assessment considered unreliable.	Stock trends are unprecedented. More rapid changes in stock abundance than have ever been seen previously, or a very long stretch of poor recruitment compared to previous patterns.	Extreme anomalies in multiple ecosystem indicators that are highly likely to impact the stock. Potential for cascading effects on other ecosystem components

Table 2. Alternative procedures for reducing the ABC from the maximum permissible (which the SSC said not to use)

	Specified buffer, restrained response	Specified buffer, robust response	Suggested ranges for buffer	Increase SPR in HCR
Level 1: Normal	No buffer	No buffer	No buffer	F40%
Level 2: Substantially increased concerns	5%	10%	5%-10%	F45%
Level 3: Major concerns	10%	20%	10%-25%	F50%
Level 4: Extreme concerns	15%	30%	15%-40%	F60%

GOA pollock

Risk Matrix Evaluation

Assessment-related considerations	**Population dynamics considerations**	**Environmental/ecosystem considerations**
Contradictory data, very poor model fits to recent survey indices. But model seems robust, no retrospective pattern. **Conclusion: Level 2, substantially increased concerns**	Stock dominated by a single year class. Four years of very weak recruitment. There have been similar patterns in the past, but never this extreme. **Conclusion: Level 2, substantially increased concerns**	Onset of a marine heatwave and projections of a weak El Niño are not conducive for winter survival for age-0 pollock. Zooplankton indicators are mixed. Some suggest prey for adult pollock is abundant, but planktivorous parakeet auklets in the central GOA had poor reproductive success in 2018. **Conclusion: Level 2, substantially increased concerns**

Overall score is Level 2: Substantially increased concerns. Author's recommended ABC = 85% of maximum permissible (15% buffer) based on mode of historical buffers.

EBS pollock

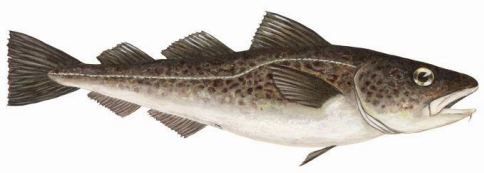
Risk Matrix Evaluation

Assessment-related considerations	**Population dynamics considerations**	**Environmental/ecosystem considerations**
Retrospective analysis indicates no consistent biases in the assessment. The model tracks the available data well including multiple abundance indices. Of minor concern (presently) is the fact that the model estimate of declining abundance is somewhat less than that suggested by the survey data. **Conclusion: Level 1, No increased concerns**	Near term recruitment likely to be below average. Spawning population has low diversity of ages and the mean age of the spawning stock (weighted by spawning output) at relatively low levels. **Conclusion: Level 2: substantially increased concerns**	Unprecedented warm conditions in 2018 resulted in reduced production. Weak, delayed phytoplankton bloom, reduced biomass. Zooplankton prey base reduced. Unprecedented seabird die-off event and broad reproductive failures indicate insufficient prey resources **Conclusion: Level 2: substantially increased concerns**

Overall score is Level 2: Substantially increased concerns. Author's recommended ABC = 85% of maximum permissible (15% buffer) based on mode of historical buffers.

Gulf of Alaska cod

Risk Matrix Evaluation



Assessment-related considerations	**Population dynamics considerations**	**Environmental/ecosystem considerations**
Early recruitment estimates are uncertain and sensitive to model assumptions, resulting in uncertainty in biomass reference points. However other aspects of the assessment seem relatively robust. **Conclusion: Level 2, substantially increased concerns**	Three years of poor recruitment in 2014-2016. Increased natural mortality during the 2014-2016 GOA marine heat wave. Female spawning biomass is currently estimated to be at its lowest point in the 41-year time series. **Conclusion: Level 4, extreme concern**	Improved foraging conditions for adults and juveniles from 2017 to early 2018. However the onset of a new marine heatwave in October 2018 and projections of a weak El Niño are not conducive for age-0 survival. **Conclusion: Level 2: substantially increased concerns**

Overall score is Level 4: Extreme concern. Author's recommended ABC = catch that will maintain SSB above B20% in 2019 with 50% probability (13.6% buffer).

Sablefish

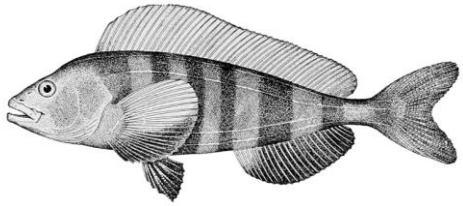
Risk Matrix Evaluation

Assessment-related considerations	**Population dynamics considerations**	**Environmental/ecosystem considerations**
Contrasting trends and poor fits to the survey indices add to uncertainty. Substantial decrease in this year's estimate of the very large 2014 year class. However, the model is robust in most situations and there is no retrospective pattern.	Uncertainty in the unprecedented size of the 2014 recruitment. Hollowing out of the older ages. Uncertainty in how quickly the 2014 class will succeed in entering the spawning population.	Trend modeling for sablefish ecosystem indicators reveal average to good conditions for the larval and early juvenile stages of the 2017 year classes but potentially suboptimal foraging conditions for the juvenile maturing stage of the 2014 year class. Condition of maturing fish was at an all-time low in 2017 and remained below average in 2018.
Conclusion: Level 2, substantially increased concerns	**Conclusion: Level 4: Extreme concern**	**Conclusion: Level 2: substantially increased concerns**

Overall score is Level 4: Extreme concern. Author's recommended ABC = last year's ABC (45% buffer).

BSAI Atka Mackerel

Risk Matrix Evaluation



Assessment-related considerations	**Population dynamics considerations**	**Environmental/ecosystem considerations**
Moderate retrospective bias is attributed to noisy survey estimates rather than problems with model assumptions and structure. Adequate fits to survey and fishery data. **Conclusion: Level 1, Typical to moderately increased concerns**	Very low biomass in Central Aleutians in 2018 survey, but likely due to patchy distribution rather than a true change in abundance. Moderate decline in stock abundance since 2005 peak. Stock trends are typical for the stock and expected given the stock dynamics; recent recruitment is within the lower end of the normal range. **Conclusion: Level 1: Normal**	Atka mackerel condition was slightly below average in 2018. CPR data near the Aleutians have shown anomalously small copepod taxa, but average to above average biomass during the recent warm years of 2015-2017. This suggests that foraging conditions for Atka have been stable through the recent warm years, particularly in the Western Aleutians **Conclusion: Level 1: Normal**

Overall score is Level 1: Normal, no elevated concerns. Author's recommended ABC = 100% of maximum permissible.

Discussion points—possible JPT recommendations

Application of the risk table is a valuable exercise to summarize the assessment strengths and weaknesses, stock trends, and environmental/ecosystem forcing.

In the next assessment cycle, the JPT recommends that it be …

-Applied to all tier 1-3 stocks.

-Applied whenever there is a recommendation to reduce the ABC below the maximum permissible. Eventually it should be applied to all Tier 1-3.

-Applied at the discretion of the assessment author when making a recommendation to reduce the ABC below the be maximum permissible.

Discussion points—possible JPT recommendations

The overall risk is currently calculated as the highest value across the three scores.

In the next assessment cycle, the JPT recommends that it be …

-The average across the three scores

-The highest of the three scores (ie., no change to current practice)

-Other

Discussion points—possible JPT recommendations

Experience applying the risk table led to the following recommended changes:

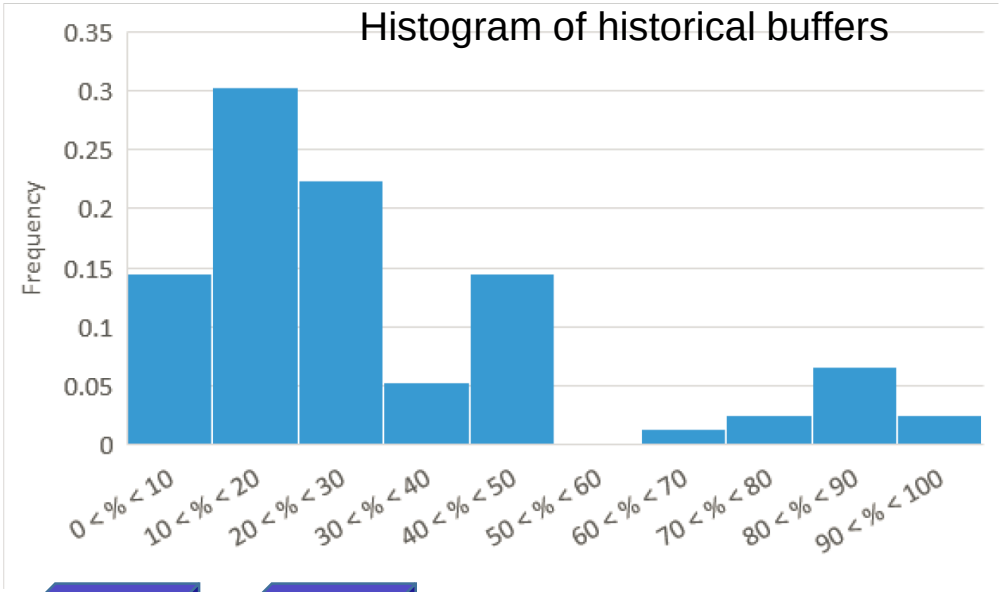
-Reducing the number of levels from four to three.

-Increasing the number of levels from four to five.

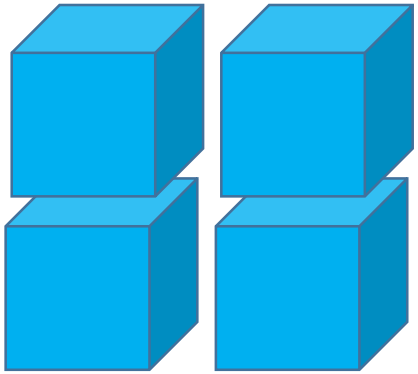
-Clarify that the majority of ecosystem indicators should be adverse before the risk level is considered to be substantially increased

-Other

Back to
Grant's clever idea:



ed in 10% increments.



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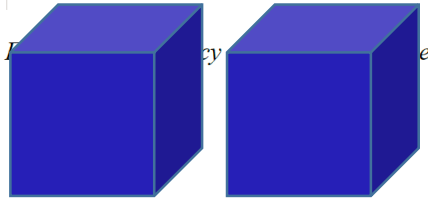

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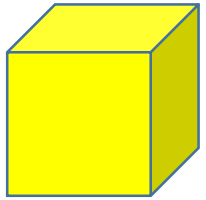

Category 4: 80% buffer

Discussion points—possible JPT recommendations

Pending additional guidance from the SSC, the JPT proposes

-to apply a default buffer of 15% for stocks at level 2, and a buffer of 35% for stocks at level 3. For stocks at level 4, no default is proposed, and analytical approaches are recommended.

-to apply a default buffer of 15% for all levels, and recommend continued exploration of other approaches (i.e., GOA cod example).

This approach is intended as an interim measure to maintain historical distibution of buffers when making recommendations to reduce ABC below the maximum permissible.