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Consideration of exceptional circumstances - SBT 2022

Preece AL and Davies CR
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Abstract

The meta-rules adopted with the CCSBT Management Procedure (MP) provide a process to determine whether exceptional circumstances exist and a process and guidelines for action to address issues when identified. The aim is to identify exceptional circumstances where stock or fishery indicators, the MP input data, population dynamics, fishing or fishing operations are substantially different from the conditions under which the MP was tested or if catches are greater than the recommended TAC. If there is evidence for exceptional circumstances, then the process is to determine the potential severity of these and follow the guidelines for action. The ESC identified exceptional circumstances in 2019 regarding the very high Japanese longline CPUE estimate for 2018. To resolve this, a new CPUE series has been developed. The impact of the new series on the operation of the MP was evaluated at OMMP12, for consideration by the 2022 ESC. The view of the OMMP group is that this exceptional circumstance has now been resolved by the development of the new CPUE series and evaluation of its impact on the MP performance.

The estimate of abundance of the age 2 cohort in 2020 is missing because the gene-tagging program was cancelled in 2020 because of poor fishing and logistic complications due to Covid-19. The 2021 ESC noted that the MP, the Cape Town Procedure, is designed to operate effectively when there is missing gene-tagging data in the time series used in the MP. The close-kin dataset has been updated and is within the expected range of values from the 2019 operating models. Review of other indicators of the stock and fishery has not identified any unusual conditions, and no substantial changes in fishing operations were noted. There continues to be uncertainty in the catch at size data from the Indonesian spawning ground fishery that needs to be further investigated and resolved. These data are used in the OMs and in the close-kin mark-recapture program and, hence, have potential impacts on both the operation of the MP and the OMs used for stock assessment. Total reported catches are below the TAC. An estimate of potential non-member effort identified increasing effort trends, but there is no new estimate of non-member unaccounted mortality and no direct evidence provided that would indicate that these catches are being taken at levels against which the MP is considered to be robust. From this review of evidence for exceptional circumstances we have not identified any need for changes to the recommended TAC. We note the need, previously identified by the ESC, to address the uncertainties in the size and age data from the monitoring of the catches from the spawning ground and reducing the uncertainty in total removals.

1 Introduction

The SBT MP meta-rules' schedule of activities includes an annual process for identifying exceptional circumstances (Anon 2020a). Exceptional circumstances are events, or observations, that are outside the range for which the CCSBT MP was tested and, therefore, indicate that application of the total allowable catch (TAC) generated by the management procedure (MP) may be highly risky, or highly inappropriate.

The exceptional circumstances process under the meta-rules involves the following three steps:

1. Determining whether exceptional circumstances exist, by examining whether there were any substantial changes in stock and fishery indicators, inputs to the MP, population dynamics or fishery or fishing operations, and if recent catches and other removals have been greater than the MP's recommended TACs.
2. A "process for action" that examines the severity (and implications) of the exceptional circumstances for the operation of the MP, and the types of actions that may be considered.
3. "Guidelines for action" that determine how recommendations from the MP might be altered, if at all, based on the most recent reconditioning of the Operating Model (OM).

The meta-rules schedule of activities for implementation of the MP specifies frequency of TAC setting using the MP, that the stock assessment is offset by 1 year from MP TAC decisions, timing of an MP review and the consideration of exceptional circumstances. The meta-rules provide a safety-net around the implementation of the MP and TAC recommendations, and transparency of decision making by the Commission.

The meta-rules were revised in 2020 as part of the full specification of the Cape Town Procedure (Attachment 8, Anon 2020a).

This year we are using the meta-rules process to review the recommended TAC for 2023 that came from running the MP in 2020 and to review the recommended TACs for 2024-2026 which come from running the MP in 2022.

2 Examining evidence for the existence of exceptional circumstances in 2022

The meta-rules specify the information that should be checked for evidence of exceptional circumstances. The following have been examined:

2.1 Stock and fishery indicators

The indicators papers (Takahashi and Itoh, 2022; Patterson, 2022) and national reports in 2022 do not identify any unusual or recent changes in characteristics of the stock or fishery. The grid type trolling index (juveniles) is low in recent years (Itoh, 2022). Age specific CPUE signals were above the low levels observed in the early 2000s (Takahashi and Itoh, 2022).

2.2 MP input data

The specified data used in the MP are the Close-kin Parent-offspring Pairs (POPs) and half-sibling Pairs (HSP), gene-tagging and Japanese longline CPUE index of abundance.

2.2.1 Close-kin data

The Close-kin data were updated in 2022 (Farley et al., 2022). The observed data (number of POPS and number of HSPs) fall within the range of estimates from the operating models used in MP testing in 2019 (Figure 1) (Anon, 2022a; Hillary et al., 2022).

2.2.2 Gene-tagging data

The gene-tagging program was developed and adopted as a recruitment monitoring program that provides absolute abundance of 2-year-old fish in the year of tagging for use in the MP. The gene-tagging estimate of age 2 abundance in 2020 is not available because the 2020 tagging season was cancelled due to poor weather, few fish tagged, and COVID-19 travel complications. Four estimates of abundance for the years 2016-2019 are available (Preece and Bradford, 2022) and the MP is designed to handle missing gene-tagging data (para 98, Anon 2021). The comparison of expected number of matches from the reconditioned operating models in 2022 and observed values from the gene-tagging program indicates that the gene-tagging data are within the range expected (Figure 2; Hillary et al., 2022).

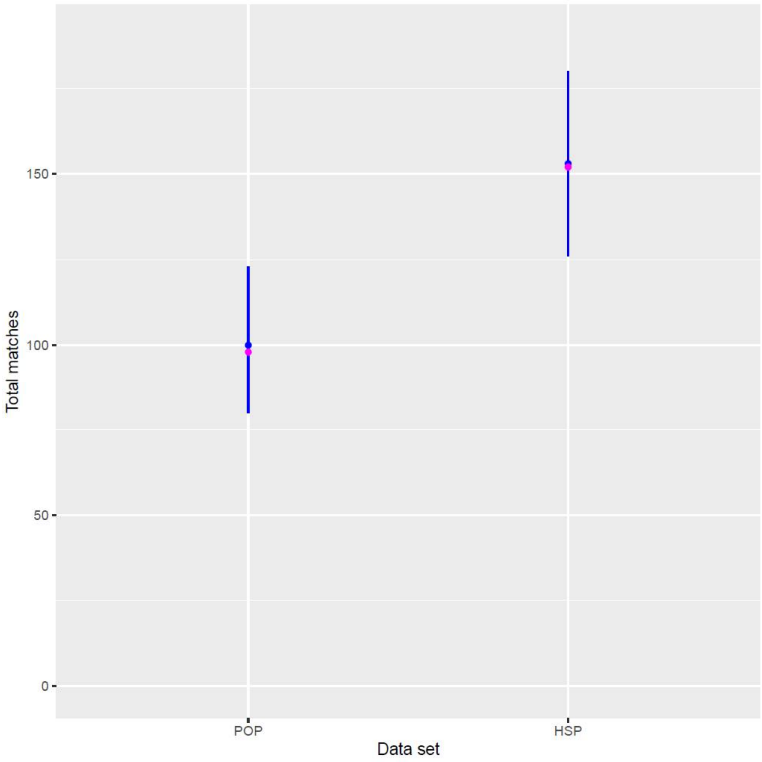

Figure 1 The expected number of POPs and HSPs from the reconditioned OMs in 2022 (base21) (blue dot and confidence interval), and the 2021 observed data (magenta dot).

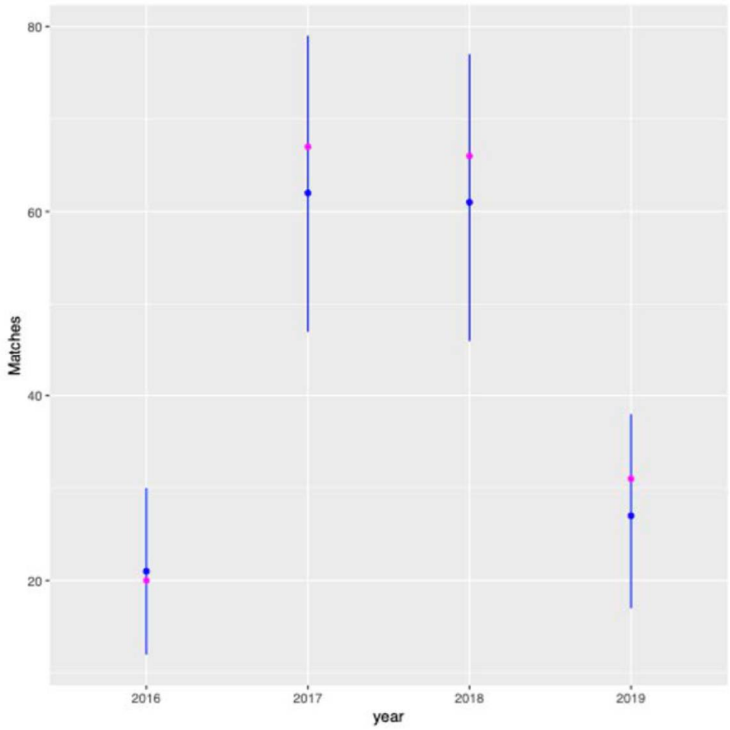

Figure 2 Observed gene-tagging data (magenta) and predictive fit to the gene tagging data (blue) from the reconditioned OMs in 2022 (base21).

2.2.3 CPUE series

The standardised Japanese longline CPUE series used in the MP in 2020 (Itoh and Takahashi, 2020) was identified as an exceptional circumstance in 2019 and a process of investigation initiated. Very

high CPUE estimates from unfished squares included in the standardisation resulted in a very high point estimate for the index for 2018. Exploration of the issue and development of a new standardisation resulted in the OMMP12 recommendation that the ESC should adopt the new CPUE series for use in the MP (Anon 2022a).

The OMMP reviewed the impact of adopting a new CPUE series in the MP using updated operating models. There are several differences in the reference set of models from the 2019 adoption of the MP and the 2022 OMs, which have also been updated with new data. In summary, the OMMP determined that: 1) the new CPUE series is within range of projected values calculated in 2019, 2) that the biomass projections conducted with the new OMs overlap substantially with the 2019 OM biomass projections, 3) and that there is a high probability (0.87) of meeting the original interim rebuilding target agreed in 2011 ($Pr(TRO/TRO_0>0.20)=0.70$ by 2035). There is a level of diversion from the new rebuilding target, described further below, that is not unexpected and is not attributed to the new CPUE series. The OMMP agreed that the new CPUE series should be used in the MP to recommend the future TAC.

2.3 Population dynamics

There are no substantial changes in our knowledge and understanding of the SBT population dynamics compared to the OM conditioning used to test and tune the Cape Town Procedure in 2019. The grid of operating models was updated in 2020 for the stock assessment and these operating models have been updated in 2022 with more years of data and the new CPUE series (Hillary et al. 2022, Anon 2022a). The 2022 operating models indicate slower rebuilding to the target level of relative Total Reproductive Output (TRO) (i.e., the median relative TRO in 2035 was 0.28, slightly below the target of 0.3, and the probability of being above $0.3TRO_0$ is 0.39). This difference is not unexpected and is not considered an exceptional circumstance, given the changes to the OMs (changes in M0, M10 and steepness values), 3 more years of data, and the TAC decisions that have already been made and implemented, which constrain the range of potential future trajectories for stock rebuilding relative to those reported in 2019. The updated operating models indicate that the median current level of depletion is 0.22 which is above the initial rebuilding target of 20% of initial TRO. The rate of stock size increase is well within the range explored in the robustness testing of the MP.

2.4 Fishery or fishing operations

There were no major changes in fisheries or fishing operations identified in 2022 from the available national reports, CPUE and fishing operation papers (Itoh, 2022b).

There remains uncertainty in the size and age composition of SBT landed by the Indonesian longline fishery, which is important for monitoring changes in the spawning population and for the close-kin mark-recapture program and stock assessment. Farley et al (2021) describe the current issues and note that the size data from the two sources available (catch monitoring and CDS) provide different age composition results for the five years compared. Farley et al (2021) recommend that further work is conducted to examine the uncertainties identified and to refine and improve the quality control of the data. This issue regarding uncertainty in Indonesian catch and size data was listed as a potential exceptional circumstance in previous years. Progress has

been made, but the issues have not yet been resolved, and further work is needed (para 146-150, Anon 2021).

2.5 Catch relative to TAC

Reported catches for the 2021 fishing season are below the TAC set in 2020 (Anon 2022b). The OMMP reviewed the estimates of total non-member longline effort, and noted an increase in 2020, but there is no updated estimate of potential non-member unaccounted mortality (catch) of SBT. One SBT was detected and reported as non-member catch in 2021, and no other reports are noted. The Cape Town Procedure has been designed to be robust to a level of unreported catch (Anon 2020a), and there is no evidence that this level has been exceeded.

3 Conclusion

In considering the potential for exceptional circumstances, we have examined whether: 1) the inputs to the MP are affected, 2) the population dynamics are potentially significantly different from those for which the MP was tested (as defined by the 2019 Reference and Robustness sets of OMs), 3) the fishery or fishing operations have changed substantially, 4) available fishery indicators have concerning trends, 5) total removals are greater than the MP's recommended TACs and UAM accounted for in MP testing, and 6) if there are likely to be impacts on the performance of the SBT rebuilding plan as a result. It is possible that additional exceptional circumstances may be identified at the ESC's annual review of stock and fishery indicators.

In summary:

The exceptional circumstance triggered in 2019 by the very high 2018 CPUE data point in the Base CPUE series and concerns with standarisation have been resolved by development of a new CPUE series. The new CPUE series has been reviewed by the OMMP in updated operating models and no exceptional circumstances were detected. Further work on size monitoring program from Indonesian fisheries is recommended.

Based on this review, no change is recommended for the 2023 TAC (which was recommended from running the MP in 2020 (Anon 2020)), and there is no recommendation to change the recommended TAC for 2024-2026 block (from running the MP in 2022).

The meta-rules process provides a schedule of activities for the implementation and review of performance of the MP. The thorough and systematic annual examination of exceptional circumstances assists the ESC to provide transparent and clearly reasoned TAC recommendations to the Commission in the context of the objectives of the MP and the conditions under which it was tested.

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Contact us

1300 363 400
+61 3 9545 2176
csiroenquiries@csiro.au
www.csiro.au

For further information

Oceans and Atmosphere
Ann Preece
+61 3 6232 5222
ann.preece@csiro.au
www.csiro.au/en/Research/OandA