

### **Chairman's report of the Twenty Eighth Meeting of the Extended Scientific Committee**

This is a short report to describe and summarise the key activities and advice from the Twenty-eighth Extended Scientific Committee (ESC28) meeting of the CCSBT. The full report of ESC28 is at CCSBT-EC/2310/Rep02.

#### **Stock Status and Management advice**

A new stock assessment was carried out in 2023. Since 2017 the ESC has reported stock status based on a measure of total reproductive output or TRO. TRO is similar in concept to the commonly used measure, SSB, but assumes a greater level of reproductive success for older fish. The ESC also reports B10+ which is the biomass of all fish aged ten years or older. Again, this is similar to SSB. The last full stock assessment conducted in 2020 indicated that the TRO was 20 % the initial TRO and that the stock had grown steadily from its low point in 2009 of 10% TRO. The new stock assessment indicates that TRO is now 23% of the initial TRO and is continuing to increase towards the CCSBT target of 30% TRO by 2035. B10+ is estimated as at 22% of its initial value. TRO is estimated to be 0.85 of the TRO associated with producing MSY and the fishing mortality rate is estimated to be at 0.46 of that associated with catching MSY.

Overall, the picture is of a stock that is recovering steadily towards the CCSBT target of 30%TRO by 2035, with fishing mortality rate at an appropriate level. The stock is expected to continue increasing under current management arrangements.

In 2019, the ESC recommended, and the EC adopted, a new management procedure as the basis for TAC setting. That procedure was developed to meet agreed strategic objectives set by the EC. The procedure is known as the Cape Town Procedure or CTP. The CTP uses gene-tagging estimates of two-year-old fish, Close Kin Mark-Recapture (CKMR) estimates of adult spawning population, and Japanese LL CPUE estimates as inputs when calculating future TAC. ESC27 ran the CTP to calculate a recommended TAC for the period 2024 to 2026. The calculation included use of a revised CPUE series. Further work on that CPUE series was conducted during 2023. This year, ESC28 followed the meta rules process agreed in 2020 to check if there is any scientific or technical reason to recommend any adjustment to the recommended TAC. None was noted and the ESC therefore confirms its recommendation that the global TAC for the years 2024 to 2026 should be 20,647 tonnes. As noted at ESC27, this is an increase of 3,000 tonnes over the TAC for 2020-2023, the maximum permitted under the CTP.

#### **SBT Catch Monitoring and Biological Sampling in Indonesia**

A proposal was received (see below) for a one-year bridging project to rebuild capacity and ensure monitoring of catch and biological sampling in Indonesian waters. Capacity has been lost during the Covid-19 epidemic due to structural changes in the Indonesian National research Innovation agency (NRIA-BRIN). ESC28 viewed as essential that the monitoring and sampling program is effective, and that data are collected to ensure continuation not just of national catch and catch composition data but also otolith collection and especially sampling necessary to ensure CKMR estimates can be available to implement the CTP in 2025.

#### **Stock assessment and Management Procedure software development**

In 2022, the EC provided funding for a project to update the stock assessment model software to make it more efficient and easily adaptable to future needs. The software has not been updated for many years and has been developed incrementally by various users. There is a need to service it and

make it suitable for future users to implement changes that might be required as the stock develops or advisory needs change.

In 2023, development has gone well and ESC28 was able to view how the new software is developing. At a scheduled workshop in November 2023, member scientists will be able to start using the new software. The project is scheduled to continue through 2024 with major developments planned and a workshop in June 2024 at which member scientists will receive intensive training.

The new software should be ready, and members trained in its use, prior to the 2026 stock assessment and review of the Management Procedure in 2027.

### **Progress on CPUE modelling and implications**

Southern bluefin tuna CPUE data need to be statistically analysed to develop indices that relate to stock abundance. These CPUE indices may then be used alongside other datasets to inform stock assessments as well as the management procedure. A key CPUE dataset for SBT assessment and the CTP is from Japanese longline fleets. In 2020, following extensive analysis, it was realised that one unusually high index point was caused by the way the statistical models treat missing cells of data, where a cell is a point in time and space. As fishing has changed over time, there has been an increasing number of missing cells and the importance of the way this is modeled has grown.

In essence, as fishing has contracted to fewer places and time periods, the statistical methods have had to interpolate for cells with no data from fewer and fewer cells with data, and with increasingly large gaps.

During 2021 and 2022, extensive inter-sessional work was carried out on understanding the problem and developing new statistical modelling approaches to deal with it. The collaborative work has focused on improved methods of interpolating. That work has continued through 2023 and has led to a more detailed understanding of the problem and statistical approaches. Further work is needed to try and improve interpolation, including the use of other fleet data (Korea and Taiwan). In 2023-2024 the scheduled work will focus on this, with updated CPUE then available by the next stock assessment in 2026.

### **Electronic Monitoring**

Following discussion at ESC27, this item has been added to the ESC agenda as a standing item. ESC28 responded to a draft, high level electronic monitoring/systems (EM/S) Guiding Principles document developed by an inter-sessional EMS WG.

There was discussion to confirm that the Guiding Principles are permissive with the intent to ensure that if EM is used, then resulting data are at least as robust as those collected by human observers. It was agreed that inter-sessionally, the Secretariat would coordinate feedback from all Members using a questionnaire to assess the potential impacts of EM on the data collection required under the existing Scientific Observer Program Standards (SOPS). This will be reported back at ESC29.

### **Recommendations from the Performance Review Panel**

ESC 27 was tasked by the EC to provide advice to CCSBT 29 on any final recommendations from the Performance Review which are pertinent to the ESC. ESC 27 developed a list of prioritised recommendations that were considered by the EC's SFMWG in July 2023. The SFMG developed an action Plan with just four points pertinent to the ESC. ESC28 considered these. One related to strategic planning which is already in hand through the SRP process developed in recent years and

already in use. Another related to electronic monitoring, which is already an ESC standing item, will be supported in 2024 through the SOPS data analysis exercise mentioned above.

The other two Action Plan points relate to the use of spawning area closures and other measures to protect spawning fish and improve recruitment. It emerged during discussion that these points essentially carried through from the 2014 Performance review, though had been modified. The ESC provided reasons why the action Plan points were not relevant or needed but agreed that members should provide input for a fuller discussion at ESC29.

### **Scientific Research Plan**

A process was adopted at ESC 26 for considering research proposals and prioritising scientific and technical projects. At ESC 27, proposals were considered and ranked in order of priority with the intention that, alongside indicative budgets, the ranking might facilitate discussions at the FAC. ESC28 reviewed existing SRP projects, both CCSBT funded and funded directly by Members, and reviewed two new proposals which were ranked alongside existing SRP projects.

ESC28 identified as essential a new proposal for a bridging project to support continuation of the SBT spawning ground monitoring and sampling program in Indonesia. The program has been affected by Covid-19 and needs to have capacity rebuilt urgently. Essential information for stock assessments and use of CKMR to implement the CTP in 2025 is derived from the program.

ESC28 also identified as essential, the ongoing gene-tagging and CKMR-related projects. These are essential inputs to the stock assessment and to the CTP which is due to be implemented in 2025.

Also identified as essential is the software update which was started during 2023 and which has made good progress. Plans for the project include further development during 2024, with intensive training at a workshop to be held instead of the OMMP WG. Model development is needed to ensure future access to Members and consultants, and to ensure relevant features are incorporated for future advisory needs. A large part of the project involves capacity building for Member's scientists. The project is on schedule to allow use of the new software and modified models at the next stock assessment in 2026 and the review of the CTP in 2027.

Continued work on CPUE to ensure an index can be maintained into future stock assessments and management procedures is included in the SRP. This work builds on the work in recent years to statistically deal with spatio-temporal changes in fishing, The focus in 2024 will be on using CPUE from multiple members, rather than using just Japanese LL CPUE.

In recent years, work on estimating potential UAM has progressed well. Two proposals for UAM-related work were received, one a continuation of existing work. ESC28 recognised the importance of these projects but did not prioritise them at this time.

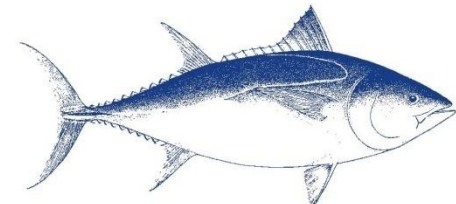
### **Budgetary implications**

The budgetary implications of the ESC's three-year workplan has been included in paper CCSBT-EC/2310/07 on the Draft 2024 and Indicative 2025-2026 Budgets.



# REPORT OF THE 28th MEETING OF THE EXTENDED SCIENTIFIC COMMITTEE

Jeju Island, Republic of Korea  
28 August-2 September 2023





# All Main Headings

---

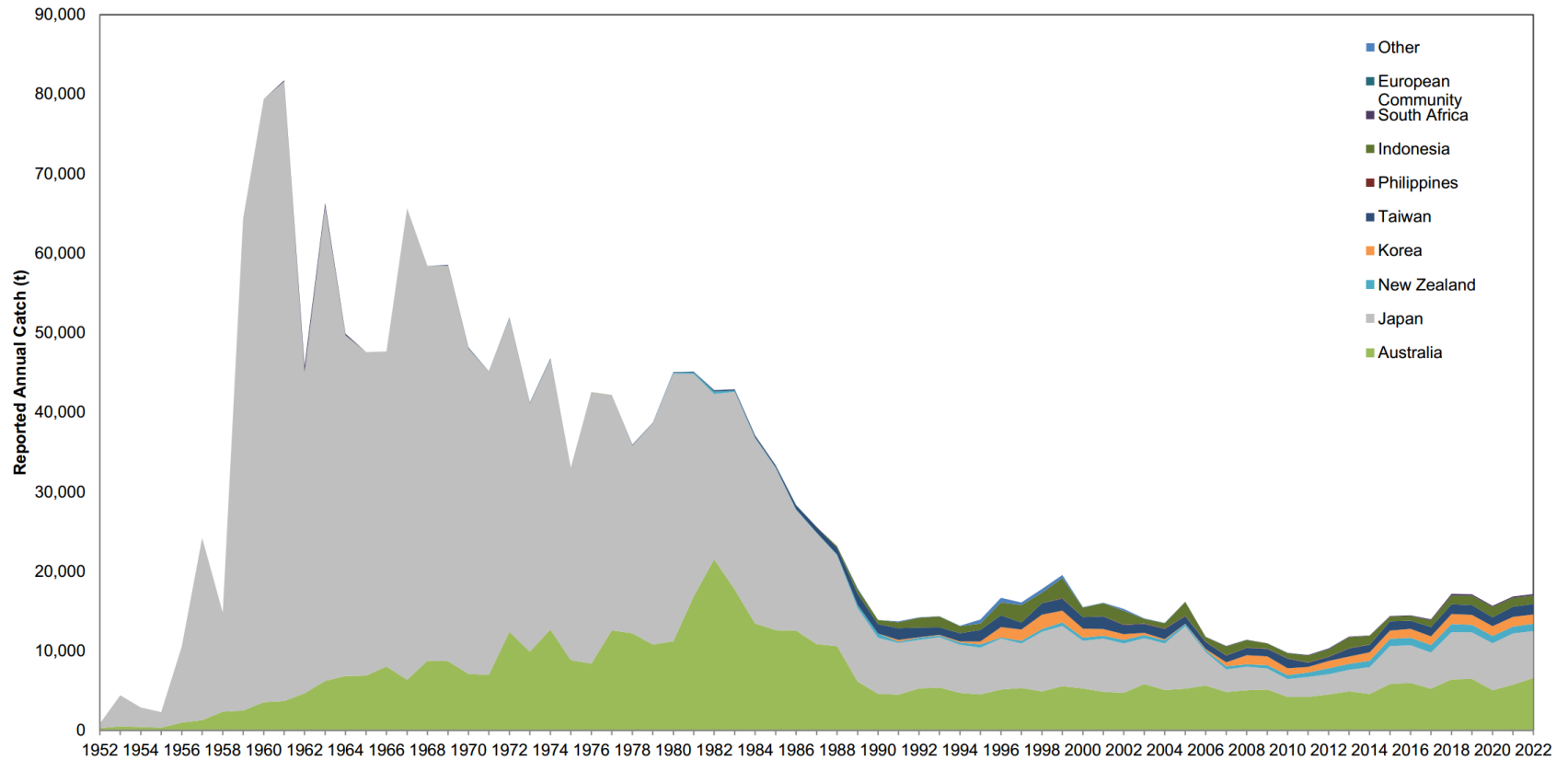
- Review of SBT fisheries and fisheries indicators
- SBT stock assessment & Stock status
- Meta Rules & Exceptional Circumstances
- Management Advice, including TAC
- Consideration of Performance Review/SFMWG recommendations
- Update of Scientific Research Program
- Proposed Workplan and budget



# Review of SBT Fisheries and Fisheries Indicators



# REPORTED SBT GLOBAL CATCHES 1952-2022





# JUVENILE INDICATORS

## Juvenile indices in the GAB

- 2016 Aerial survey index (age 2) highest on record and 2017 index higher than average - but now replaced by gene-tagging
- Gene tagging indicates age 2 in 2016 similar to that estimated in 2017 stock assessment. There is no 2020 estimate due to Covid-19 impacting sampling. These data are used in stock assessment and by the MP.
- Trolling survey indices (age 1 or 2) are not used in the stock assessment. Compared to gene-tagging (and the stock assessment), they suggest that recent recruitment might be low



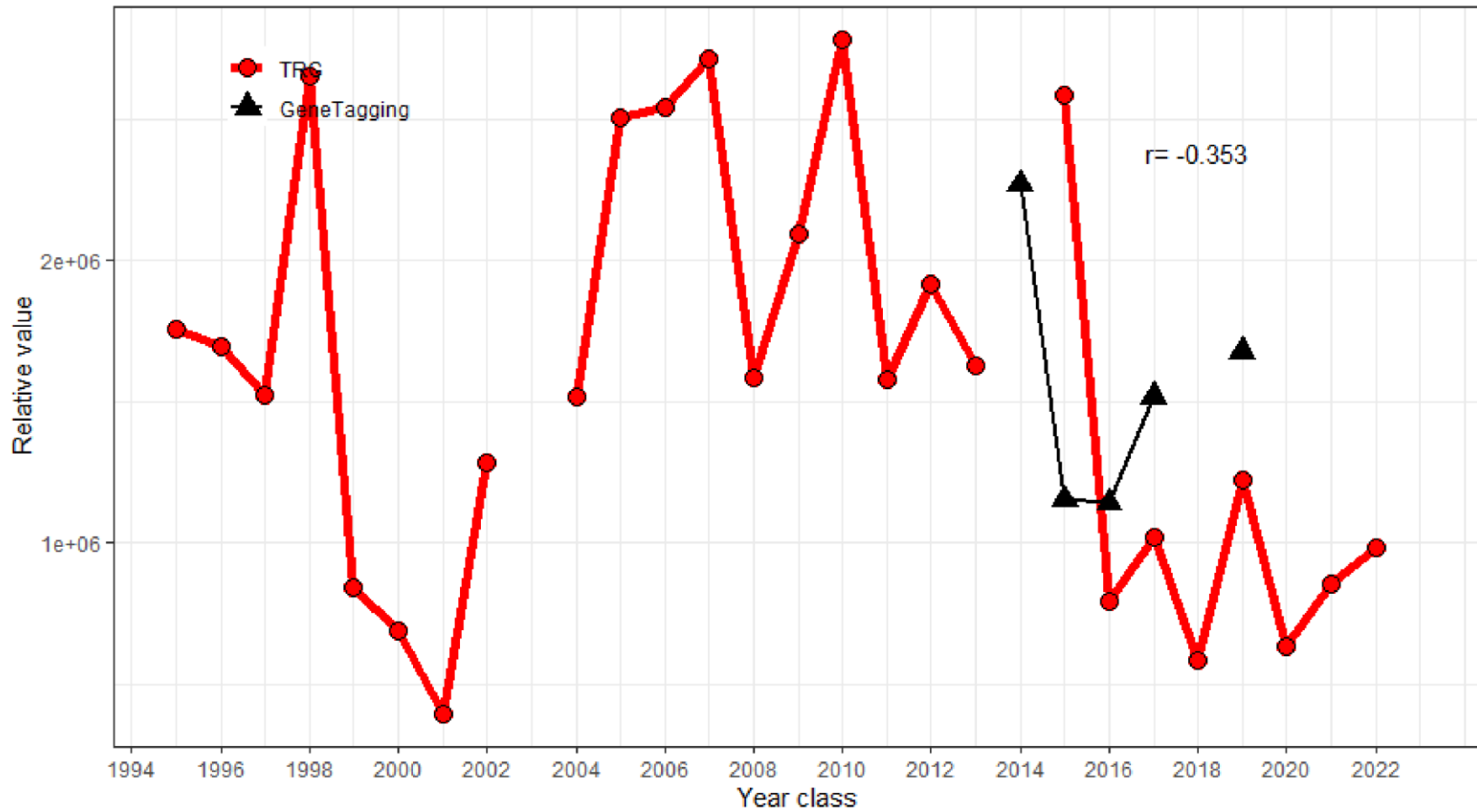


# GENE-TAGGING IN THE GAB

|      | N release | N harvest | N Matches | Abundance estimate (millions) | CV    |
|------|-----------|-----------|-----------|-------------------------------|-------|
| 2016 | 2,952     | 15,390    | 20        | 2.27                          | 0.224 |
| 2017 | 6,480     | 11,932    | 67        | 1.15                          | 0.122 |
| 2018 | 6,295     | 11,980    | 66        | 1.14                          | 0.123 |
| 2019 | 4,242     | 11,109    | 31        | 1.52                          | 0.180 |
| 2020 | —         | —         | —         | —                             | —     |
| 2021 | 6,401     | 10,742    | 41        | 1.68                          | 0.156 |



# Trolling Survey Indicators





# CPUE Indicators

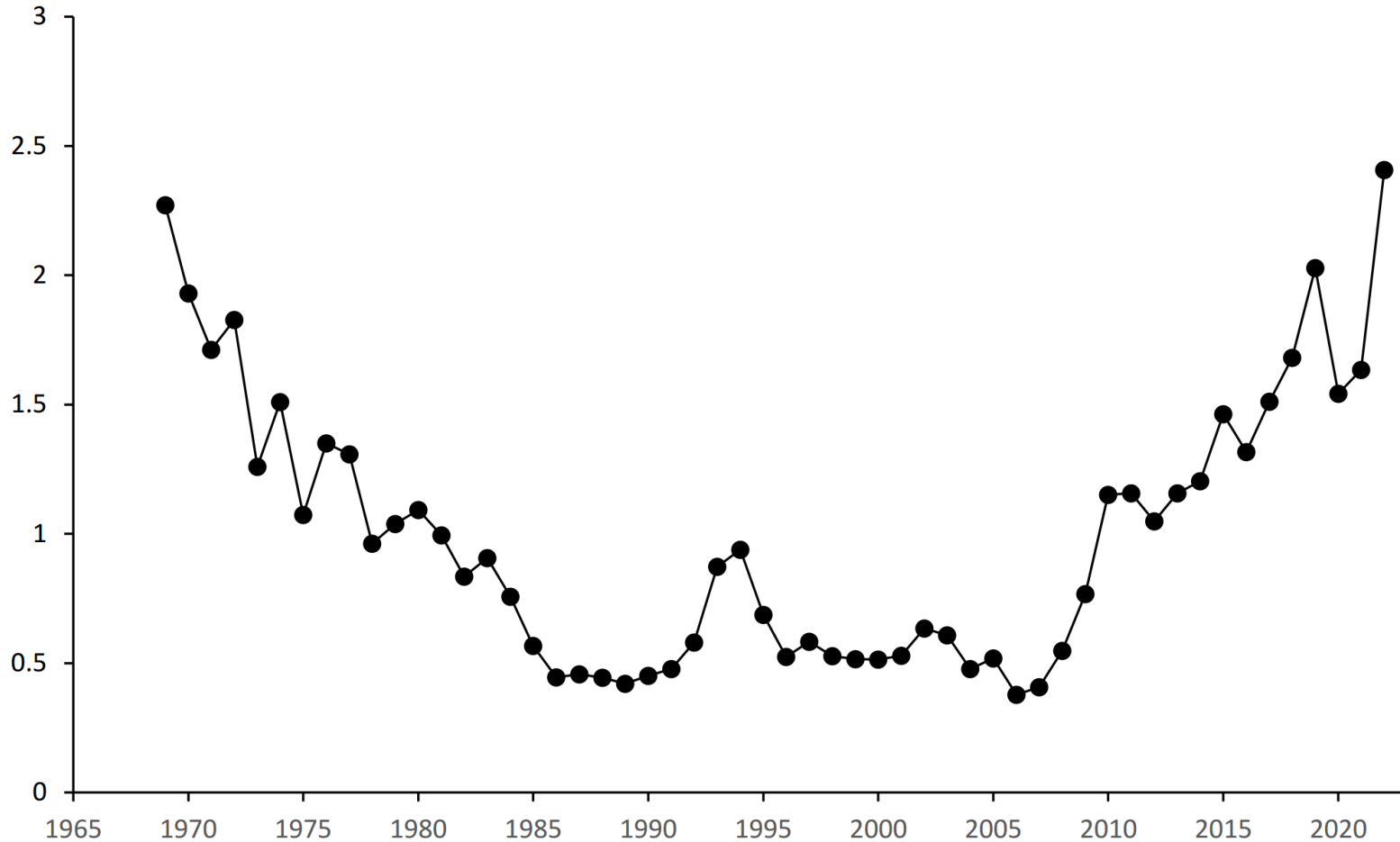
---

## Longline CPUE

- Longline CPUE indices for the Japanese fleet for age 4+ are well above the historically lowest levels in the late 1980s or mid-2000s
- CPUE index for ages 8 - 11 has increased from 2011-2015
- Index for age 12+ has fluctuated at a low level
- Taiwanese eastern CPUE has increased from 2015
- Korean CPUE has increased since 2005

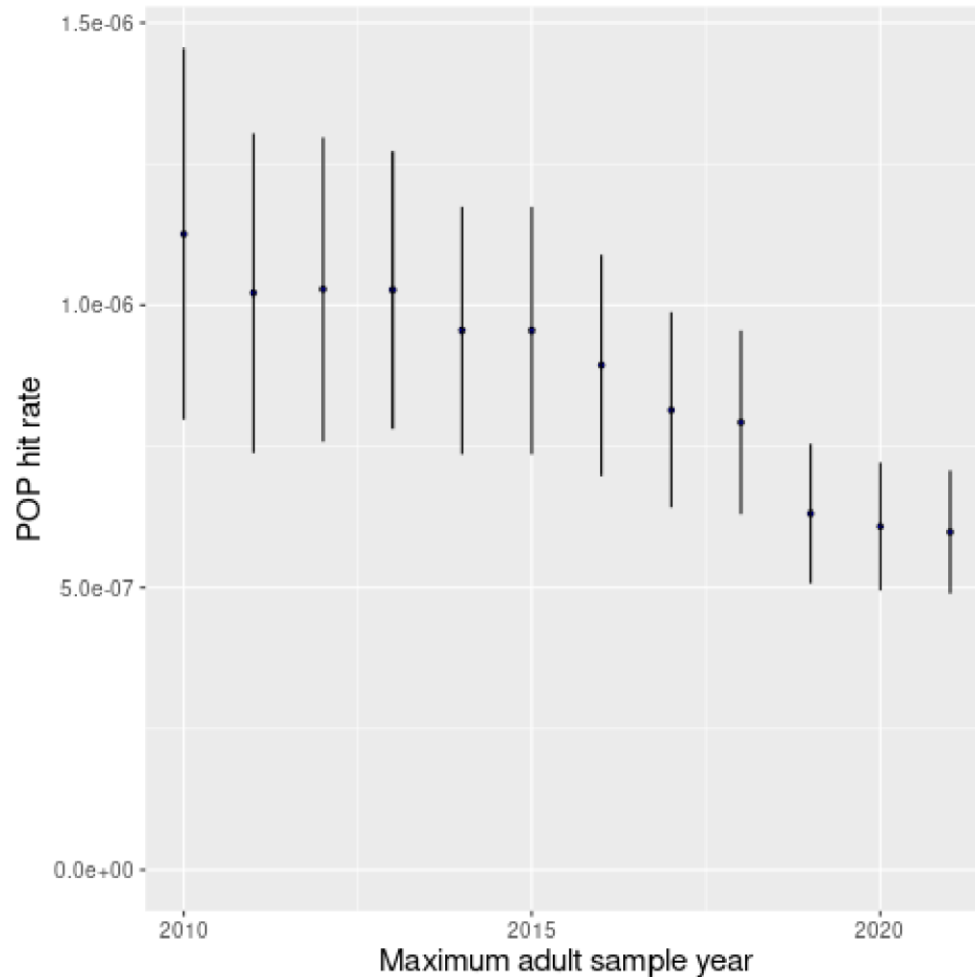


# Age 4+ Japanese CPUE





# CLOSE KIN MARK-RECAPTURE



Care is needed here...this can be read qualitatively as a mirror of population size through time

That is, it shows the breeding population increasing

This is an example of why “indices” can be confusing

What matters is the integrated stock assessment



## Summary of indicators 2019

---

- No major change in conclusions from 2021 and 2022:
- There are mixed signals about recruitment, but it appears to be at a level not seen since the late 1970s
- There are consistent positive trends in longline CPUE
- There has been a consistent increase in the CKMR empirical index of spawning stock abundance from 2008 to 2022.



# STOCK ASSESSMENT & STOCK STATUS



# Stock Assessment 1

- The 2023 stock assessment uses a reference grid of 108 operating models (OM) that capture key uncertainties related to stock productivity and data interpretation. All OM are fit to a wide range of data with extensive model conditioning and testing
- In 2017, the ESC agreed to use a new measure of the reproductive population called the Total Reproductive Output (TRO)
- TRO is defined as the total reproductive output of the adult population, reflecting not only fecundity, but also frequency of spawning and spawning success
- It gives more emphasis on older fish which are more fecund at a given weight than younger fish





## Stock Assessment 2

The 2023 Stock Assessment differs slightly from the 2020 Assessment in that amongst other things it uses:

- A grid of 108 Operating Models (OM) (cf 432) with some changes to parameter ranges explored
- A single CPUE series is used...estimated using improved models that take account of spatio-temporal variation
- Updated data, including from GT and CKMR programmes

The 2023 assessment remains reasonably consistent with the 2020 one and the 2019 OMs used to develop the CTP



# Stock Assessment 3

| Assessment year (y) | Relative TRO ( $TRO_y/TRO_0$ ) | Relative B10+ ( $B10+_y/B10+_0$ ) | $F$ -to- $F_{msy}$ ratio | $TRO_y/TRO_{MSY}$ | MSY (t)                   |
|---------------------|--------------------------------|-----------------------------------|--------------------------|-------------------|---------------------------|
| 2023                | 0.23 (0.21-0.29)               | 0.22 (0.19-0.26)                  | 0.46 (0.34-0.65)         | 0.85 (0.61-1.29)  | 30,648<br>(29,152-31,376) |
| 2020                | 0.20 (0.16-0.24)               | 0.17 (0.14-0.21)                  | 0.52 (0.37-0.73)         | 0.69 (0.49-1.03)  | 33,207<br>(31,471-34,564) |



## Stock Assessment 3a (from ESC25)

**Table 6:** Summary of stock status variables from SBT assessments (2014, 2017 and 2020) and the estimates from the OM update for MP testing in 2019. The TRO and B10+ estimates are for the start of final year+1 in the assessments (e.g. 2020 in 2020 stock assessment), and F estimates are for the final year of the assessment (e.g. 2019 in 2020 stock assessment).

| Variable                              | 2014 Status      | 2017 Status      | 2019 Status      | 2020 Status      |
|---------------------------------------|------------------|------------------|------------------|------------------|
| Relative TRO                          | 0.09 (0.08-0.12) | 0.13 (0.11-0.17) | 0.17 (0.15-0.21) | 0.20 (0.16-0.24) |
| Relative B10+                         | 0.07 (0.06-0.09) | 0.11 (0.09-0.13) | 0.14 (0.12-0.17) | 0.17 (0.14-0.21) |
| F relative to $F_{MSY}$               | 0.66 (0.39-1.00) | 0.50 (0.38-0.66) | 0.55 (0.41-0.74) | 0.52 (0.37-0.73) |
| TRO relative to $TRO_{MSY}$           | 0.38 (0.26-0.70) | 0.49 (0.38-0.69) | 0.64 (0.47-0.91) | 0.69 (0.49-1.03) |
| TRO relative to $TRO_{min}$ in 2009   | n/a              | n/a              | 1.79 (1.63-1.93) | 1.91 (1.78-2.10) |
| B10+ relative to $B10+_{min}$ in 2009 | n/a              | n/a              | 1.57 (1.45-1.72) | 1.73 (1.63-1.94) |



## Stock Assessment 4

- The 2019 OM was used for tuning the CTP such that the stock should reach 30% TRO by 2035
- The baseline reference set of OMs in the 2023 Stock Assessment still result in a relative TRO estimate of 30% in 2035, with a range of 19-45%
- All sensitivity tests suggest that the CTP would ensure the stock does not decline ... and all would be picked up through EC testing
- A wide range of projections and sensitivity tests show similar or slightly more positive stock estimates for 2025, with some exceptions



# Stock Assessment 5

**Table 3:** Projection summary (median and 80% PI), for the reference set of OMs and using the CTP (row 1) and for the sensitivity tests.

| Run                       | $P(TRO_{2035} > 0.2TRO_0)$ | $P(TRO_{2035} > 0.3TRO_0)$ | $TRO_{2025}/TRO_0$   | $TRO_{2035}/TRO_0$   | $TRO_{2040}/TRO_0$   | Mean TAC to 2035           |
|---------------------------|----------------------------|----------------------------|----------------------|----------------------|----------------------|----------------------------|
| Base22<br>(reference set) | 0.96                       | 0.51                       | 0.25 (0.22-<br>0.31) | 0.30 (0.22-<br>0.41) | 0.30 (0.19-<br>0.45) | 22,884 (22,528-<br>23,938) |
| UAMbycatch                | 0.97                       | 0.56                       | 0.26 (0.23-<br>0.31) | 0.31 (0.23-<br>0.42) | 0.31 (0.20-<br>0.46) | 22,939 (22,528-<br>23,939) |
| NoUAM                     | 0.99                       | 0.60                       | 0.26 (0.23-<br>0.32) | 0.32 (0.23-<br>0.42) | 0.32 (0.21-<br>0.47) | 22,897 (22,528-<br>23,939) |
| case2 MR                  | 0.96                       | 0.52                       | 0.25 (0.22-<br>0.31) | 0.30 (0.22-<br>0.41) | 0.30 (0.19-<br>0.45) | 22,851 (22,528-<br>23,937) |
| CPUE_Drop5                | 0.93                       | 0.45                       | 0.25 (0.22-<br>0.31) | 0.29 (0.21-<br>0.40) | 0.29 (0.18-<br>0.44) | 23,546 (20,556-<br>24,771) |
| Omega75                   | 0.98                       | 0.63                       | 0.27 (0.24-<br>0.33) | 0.33 (0.24-<br>0.43) | 0.32 (0.20-<br>0.48) | 23,548 (20,556-<br>24,493) |
| Indose1                   | 0.97                       | 0.56                       | 0.27 (0.24-<br>0.34) | 0.31 (0.22-<br>0.43) | 0.31 (0.19-<br>0.48) | 23,590 (22,575-<br>23,983) |
| LL1sel                    | 0.94                       | 0.46                       | 0.25 (0.22-<br>0.31) | 0.29 (0.21-<br>0.40) | 0.29 (0.18-<br>0.44) | 22,816 (22,528-<br>23,938) |
| Upq2008                   | 0.79                       | 0.29                       | 0.22 (0.18-<br>0.27) | 0.25 (0.17-<br>0.36) | 0.24 (0.14-<br>0.40) | 23,913 (22,619-<br>24,079) |
| Q age range               | 1.0                        | 0.73                       | 0.29 (0.26-<br>0.35) | 0.35 (0.26-<br>0.45) | 0.34 (0.22-<br>0.50) | 22,594 (22,528-<br>23,881) |
| No HSP                    | 0.95                       | 0.5                        | 0.26 (0.23-<br>0.31) | 0.30 (0.22-<br>0.40) | 0.3 (0.19-<br>0.44)  | 22,877 (22,528-<br>23,939) |
| No CKMR                   | 0.94                       | 0.35                       | 0.24 (0.22-<br>0.26) | 0.28 (0.21-<br>0.36) | 0.27 (0.18-<br>0.41) | 23,913 (22,528-<br>24,167) |
| GTI                       | 0.80                       | 0.24                       | 0.25 (0.22-<br>0.30) | 0.25 (0.18-<br>0.35) | 0.24 (0.14-<br>0.38) | 23,509 (20,556-<br>24,263) |
| S50                       | 0.93                       | 0.42                       | 0.24 (0.21-<br>0.3)  | 0.29 (0.21-<br>0.39) | 0.28 (0.18-<br>0.43) | 23,050 (22,528-<br>23,941) |
| S50_Upq2008               | 0.79                       | 0.29                       | 0.22 (0.18-<br>0.27) | 0.25 (0.17-<br>0.36) | 0.24 (0.14-<br>0.4)  | 23,913 (22,614-<br>24,038) |



# META RULES & EXCEPTIONAL CIRCUMSTANCES



# Meta-Rules & Exceptional Circumstances Testing

- The Meta-Rule process is part of the adopted Cape Town Procedure.
- It includes:
  - ❖ The process to determine whether Exceptional Circumstances exist
  - ❖ The process for action
  - ❖ The principles for action



## Meta-Rules & Exceptional Circumstances Testing

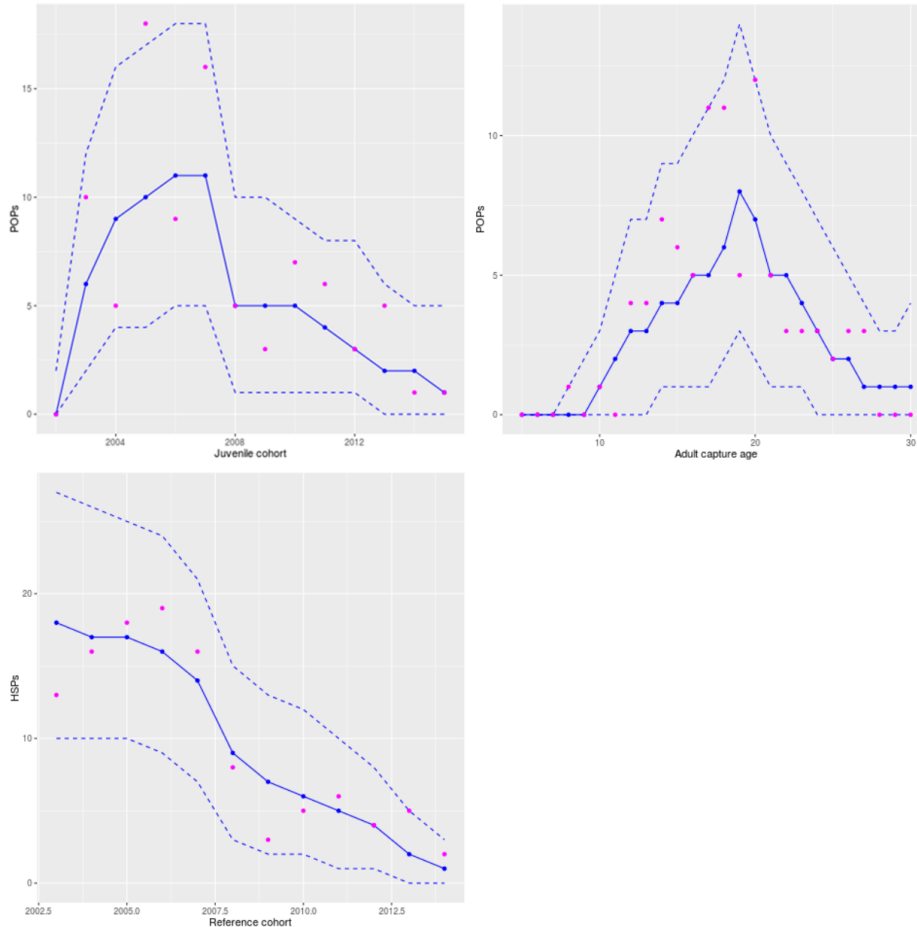
- Based on the review of indicators and submitted papers, the ESC concluded that there is no evidence of Exceptional Circumstances and that there is no need to modify its current TAC advice
- The ESC did note areas for ongoing consideration:
  - ❖ The absence of close-kin tissue sample collection during the 2021/22 and 2022/23 seasons (due to Covid-19) and the need to ensure the program is reinstated for the 2023/24 season
  - ❖ Continued impact of fishery contraction on cpue estimation
  - ❖ Changes in the Indonesian spawning fishery and associated catch monitoring and otolith collection





# Meta-Rules & Exceptional Circumstances Testing

Figure 3 The observed (magenta dots) and predicted estimates (blue lines, median and range) are POPs aggregated by juvenile cohort (a) and adult capture age (b), and HSPs aggregated by the initial cohort level (c).



## EXAMPLE FOR EC TESTING

Magenta dots are data while the blue lines show model predictions from the CTP testing

The data here all lie in the predicted range



# MANAGEMENT ADVICE, INCLUDING TAC



# MANAGEMENT ADVICE & TAC

## Recommendations for 2024-2026

- The Cape Town Procedure adopted in 2019 was run in 2022 to recommend TACs for 2024-2026
- The ECS27 recommended TAC for 2024-2026 is 20,647 t
- ESC28 concluded there is no reason to modify the 2024-2026 TAC recommendation on the basis of Exceptional Circumstances
- *Not in the ESC28 report ... The recommended TAC already accounts for non-member UAM estimates and no deduction is required*
- The ESC recommends an allocation of 3 tonnes be made in 2024 to cover mortality associated with research projects



# MANAGEMENT ADVICE & TAC

## Recommendations for 2027-2029

- In response to discussions in EC 28 on communication between the EC and ESC, ESC27 provided indicative advice on the potential TAC for 2027-2029
- ESC27 advised this advice would be updated when a new stock assessment is carried out in 2023 and as new data become available
- In projections conducted at ESC28 based on the new stock assessment and using all available data (see 11.3 of ESC28), the ESC noted that:
  - the probability of the TAC decreasing below 20,457.6 t, or increasing by 0-1,999 t, is small
  - the probability of the TAC increasing by 2,000-3,000 t is high



# CONSIDERATION OF SFMWG ACTION PLAN



# Consideration of draft Strategic Plan

- The ESC was asked to consider the science-related part of the draft Strategic Plan developed by the SFMWG
- There were four relevant items:
  - Two relate to measures to support spawning and the use of protected areas
  - One relates to Electronic Monitoring
  - One relates to prioritising strategic planning of long-term research



# Consideration of draft Strategic Plan

- Strategic planning:
  - The ESC considered this already in place through its work on the SRP in recent years
  - A process is in place, reviews are ongoing, required work for future proofing is in place
- Electronic Monitoring:
  - The ESC agreed last year at ESC27 to include a permanent agenda item on EM
  - Work on the item is already in hand



# Consideration of draft Strategic Plan

- Measures to protect spawning and recruitment and efforts to develop spatio-temporal restrictions in Indonesian waters:
  - The ESC was not positive about these Action Plan items
  - Reasons were given that spawning protection is unnecessary given current controls and successful recruitment
  - Discussion included implications for model and software development, and data needs for such work
  - There was agreement to give more detailed consideration by ESC29





# UPDATE OF SCIENTIFIC RESEARCH PROGRAM



# Updating the Scientific Research Program 1

- Updating of the SRP was delayed for a few years while the CTP was developed, stock assessments were conducted, and because of Covid-19 restrictions.
- At ESC 26, projects and project proposals for 2022 were considered and a process for improving planning was developed
- That process was used at ESC27 to look at all project proposals and to rank them
- The process was continued at ESC28, ranking new proposals alongside existing ones
- ESC28 also reviewed all existing projects
- With no stock assessment or MP implementation in 2024, ESC28 suggested there should be an in-depth consideration of the SRP at ESC29



# Updating the Scientific Research Program 2

**Table 4:** Update on current SRP projects and new proposals

| Source                  | Title  | Budget |        |      |      | Update   |
|-------------------------|--|--------|--------|------|------|--|
|                         |  | 2023   | 2024   | 2025 | 2026 |  |
| <b>Current projects</b> |  |        |        |      |      |  |
| OMMP WG                 | Operating model recoding and improvements  | 130k   | 155k   | 30k  |      | New OM coded in TMB and compared to ADMB model. The committee determined the match was adequate. For 2023-2024 meeting in Tokyo will run sensitivity models as group with training and tutorials, prioritize work on the model for 2024 through the special OMMP-? mtg to propose changes to OM structure.   |
| UAM WG                  | Update NCMN UAM estimates  | 30k    |        |      |      | New UAM estimates updated and used in 2023 stock assessment  |
| UAM WG                  | Develop methods for estimating UAM   |        |        |      |      | Project deferred indefinitely but retained within the SRP in case fishing effort conditions generating UAM change  |
| CPUE WG                 | Improving the robustness of SBT CPUE indices to changes in spatio-temporal concentration of fishing fleets | 30k    | 20-40k | 30k  |      | The ESC stressed the need for work on incorporating data from other fleets for CPUE analyses because of the increasing concentration of Japanese effort in space and time. Also, there continues to be uncertainty on the recent population trend. Also, this work will be important given climate change impacts and the potential changes in fish distributions<br>The initial SRP covered one year with the option of extending to 2-4. |
| Australia               | Second workshop on otolith-based ageing of southern bluefin tuna   | 35k    |        |      |      | To be completed early 2024   |
| Japan                   | Age-0 distribution survey  |        |        |      |      | Carried out 2nd cruise and succeeded in sampling age-0 SBT   |
| Japan                   | Trolling survey  |        |        |      |      | Carried out trolling survey in 2023  |
| Japan                   | Advancement of the trolling survey   |        |        |      |      | Updated TRG and TRP indices  |
| Australia               | Pop-up Satellite tagging in the Great Australian Bight   |        |        |      |      | Project was funded in AUS and has commenced for 3 yrs  |
| <b>New proposals</b>    |  |        |        |      |      |  |
| AUS/IND                 | SBT catch monitoring and capacity building for biological sampling of spawning ground catches in Indonesia |        | 62k    |      |      | <a href="#">AUS-IND SRP Proposal</a>   |
| AUS-UAM                 | Preparatory work on detection of unaccounted mortality   |        | 0k     |      |      | <a href="#">AUS-UAM SRP proposal</a>   |



# PROPOSED WORKPLAN & BUDGET



# ESC Workplan for 2023

The proposed workplan has the following key elements:

- As an essential item for one year in 2024, catch monitoring and capacity building for biological sampling of spawning ground catches in Indonesia
- Continuation of essential gene tagging; collection and processing, and identification of close-kin samples; and aging of Indonesian otoliths
- Continue essential/high priority recode of the Operating Model to improve flexibility, utility and understanding for all participants
- Continue development of CPUE that uses all members' data for use in future stock assessments and management procedures
- Resource requirements are detailed in Attachment 11 of the ESC 28 Report and in the Secretariat's budget paper 07 to the EC



END

