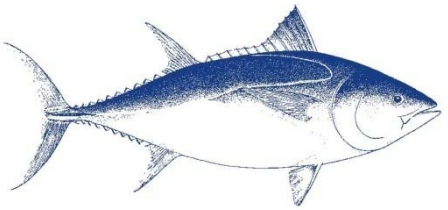
REPORT OF THE 19th MEETING OF THE SCIENTIFIC COMMITTEE

Auckland, New Zealand, 1 - 6 Sep 2014

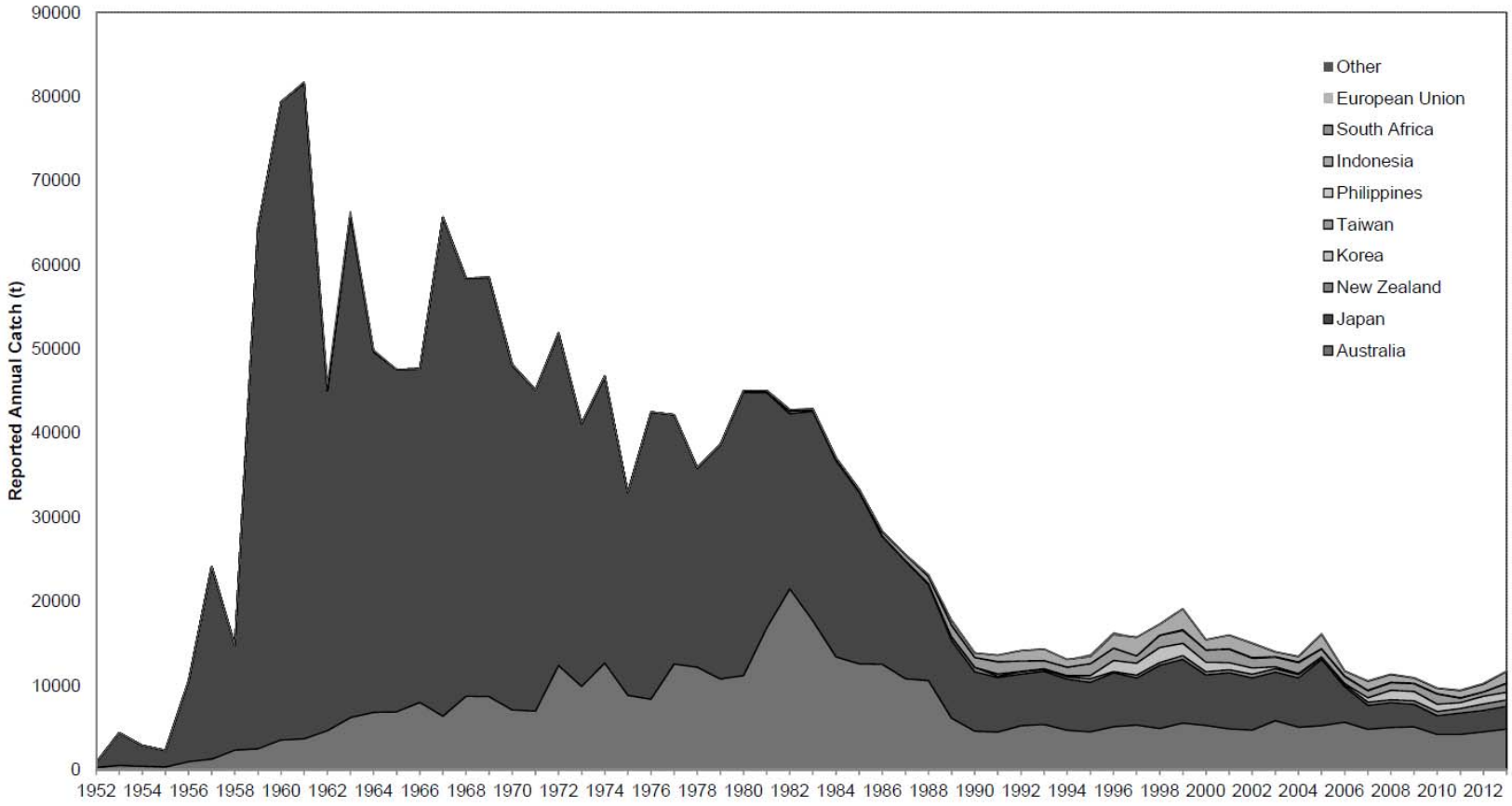


Main topics

- Review of SBT fisheries and fisheries indicators
- SBT stock assessment and projections
- Estimation of unaccounted catch mortality
- Evaluation of exceptional circumstances
- SBT stock status and management advice
- Evaluation of carry-forwards between quota blocks
- Modifications to CCSBT SOP standards
- Scientific research program for 2015 – 2017

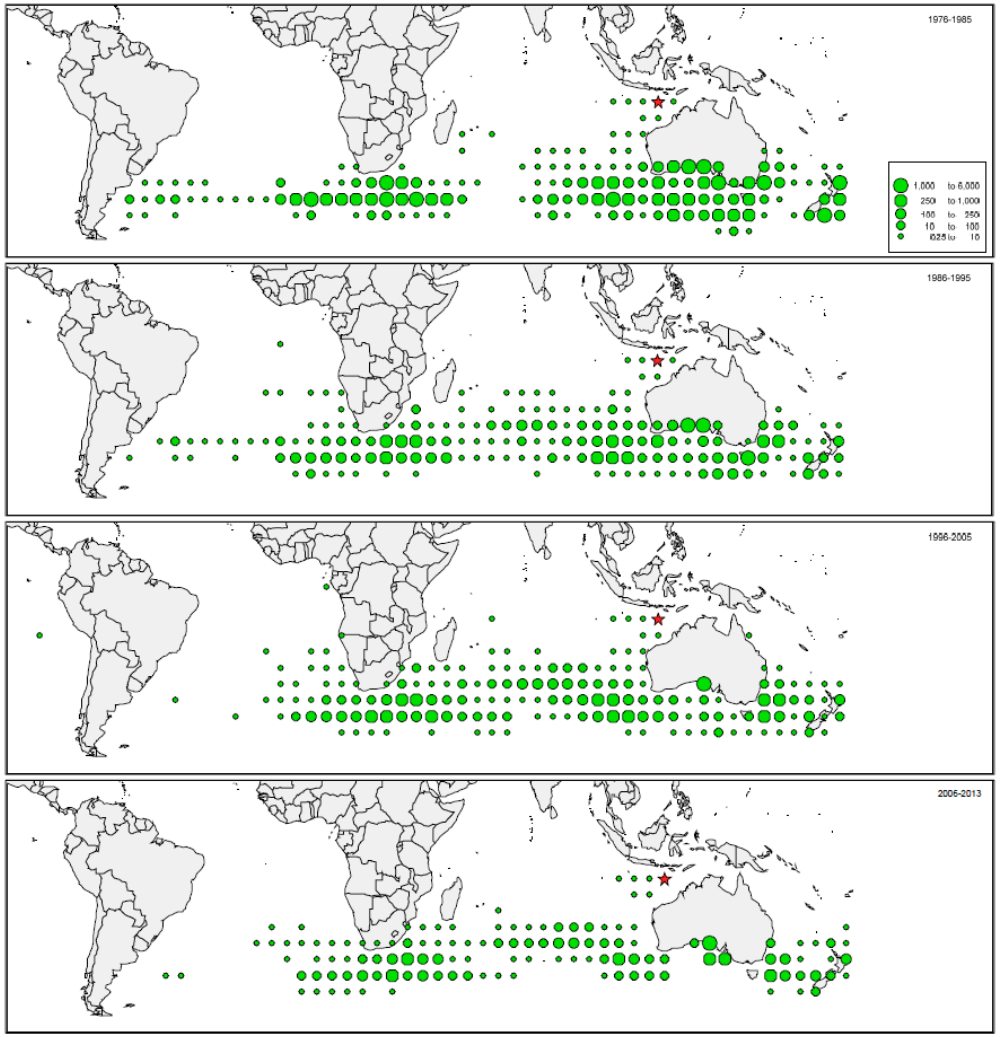
Review of SBT Fisheries and Fisheries Indicators

Reported SBT Global Catches 1952 – 2013



Reported southern bluefin tuna catches by flag, 1952 to 2013

SBT Distribution Range
1976 – 2013

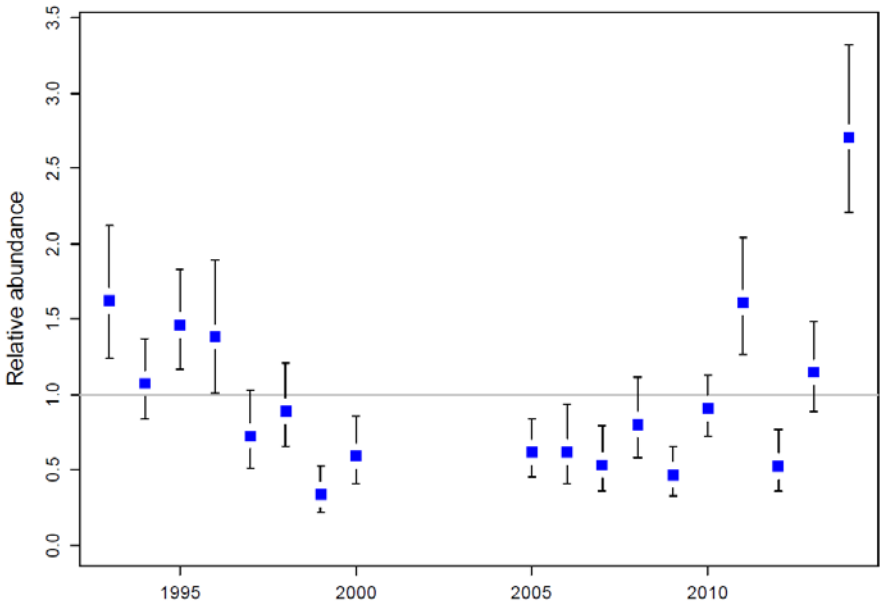


Recruitment indicators

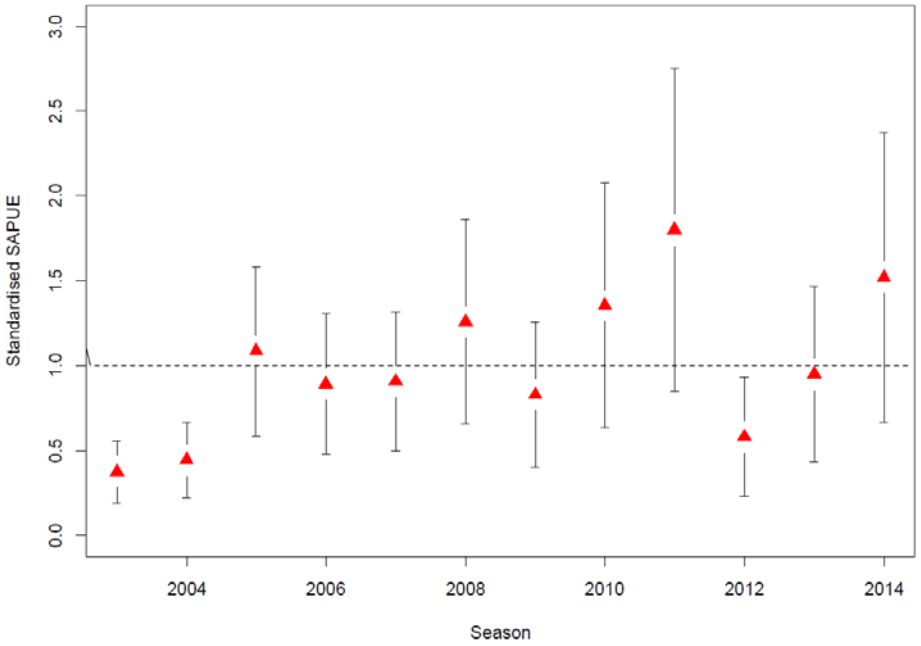
Juvenile indices in the GAB

- The 2014 scientific aerial survey index (AS) of age 2 – 4 abundance is the highest value in the time series
- The commercial SAPUE index also increased from 2013 to 2014 but to a lesser extent
- The trolling survey index declined slightly between 2013 and 2014

Recruitment Indicators

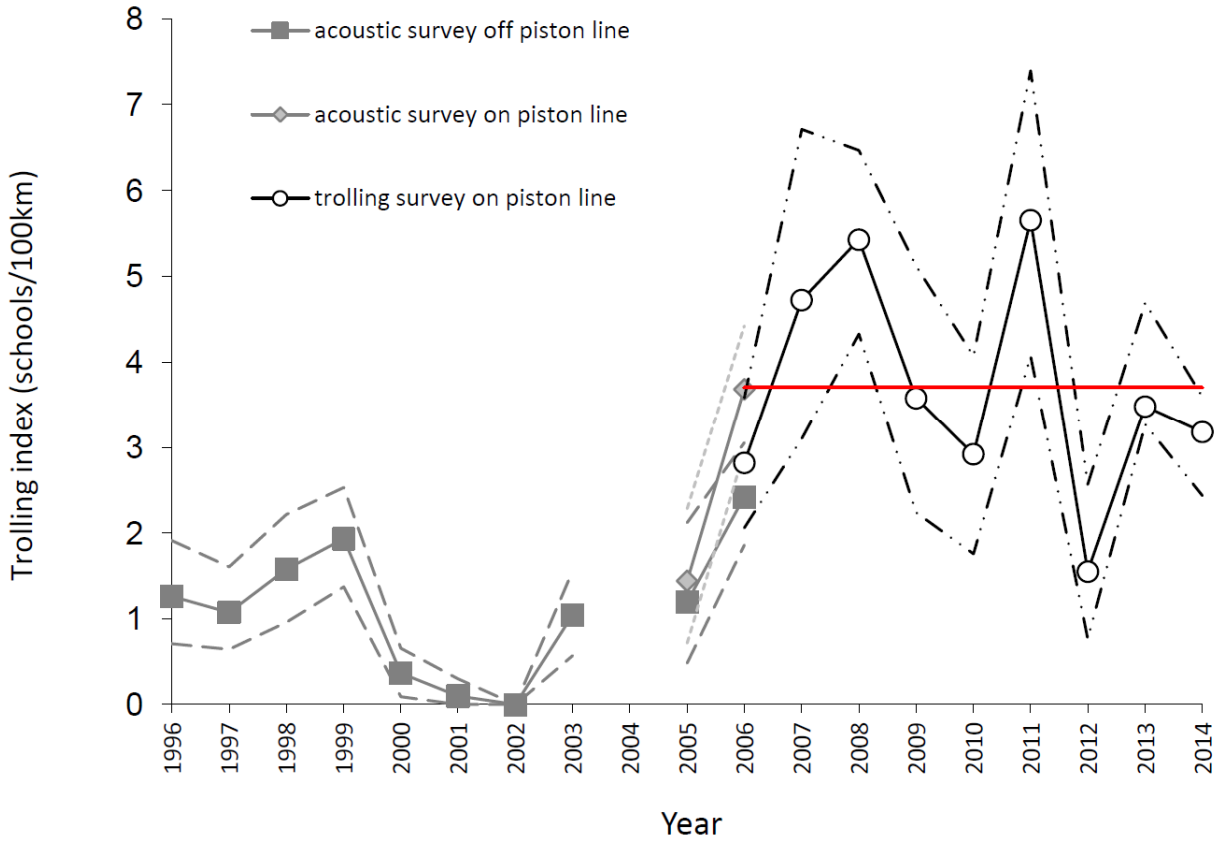


Scientific aerial survey index of relative abundance of juvenile SBT in the Great Australian Bight



SAPUE index of relative surface abundance of juvenile SBT in the Great Australian Bight

Recruitment Indicators



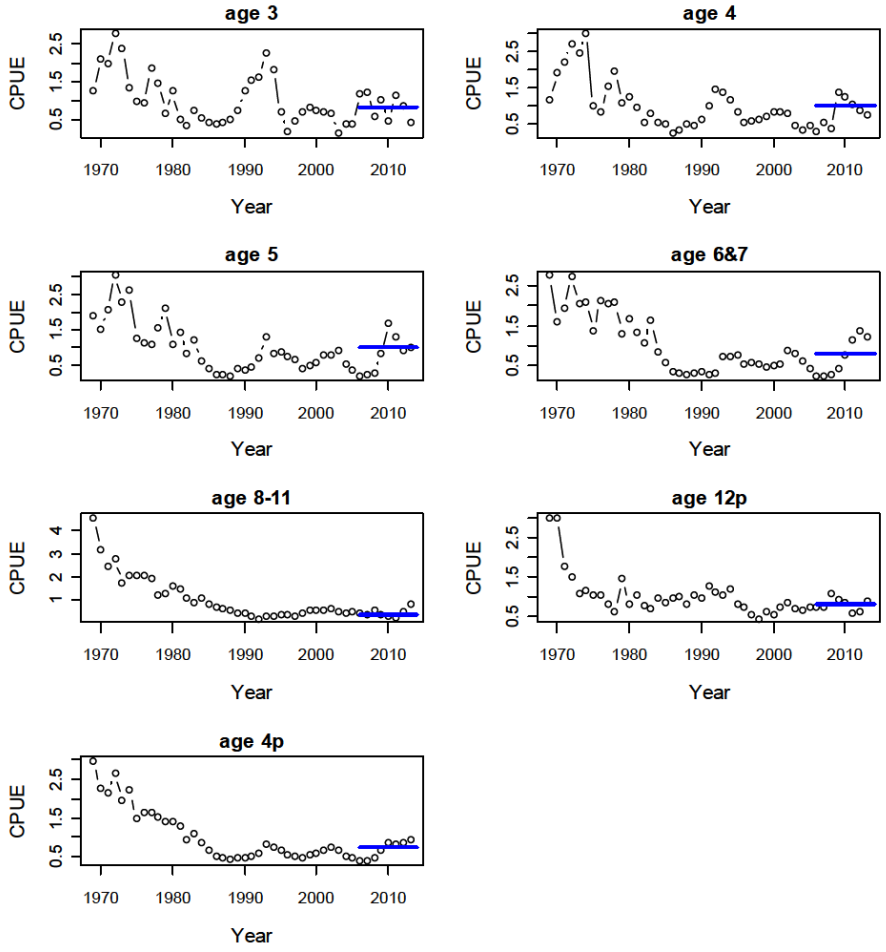
Trends of trolling catch index of age 1 SBT in the Western Australia

Trends in longline CPUE

Japanese longline CPUE

- Longline CPUE for the Japanese fleet for ages 6 and 7 increased steadily from 2007 to 2012 but decreased in 2013
- CPUE index for ages 8 – 11 decreased from 2008 to 2011 but increased in 2012 and 2013
- The age 12+ CPUE decreased from 2008 to 2010 and then fluctuated around a low level since

Age 3+ Biomass Indicators



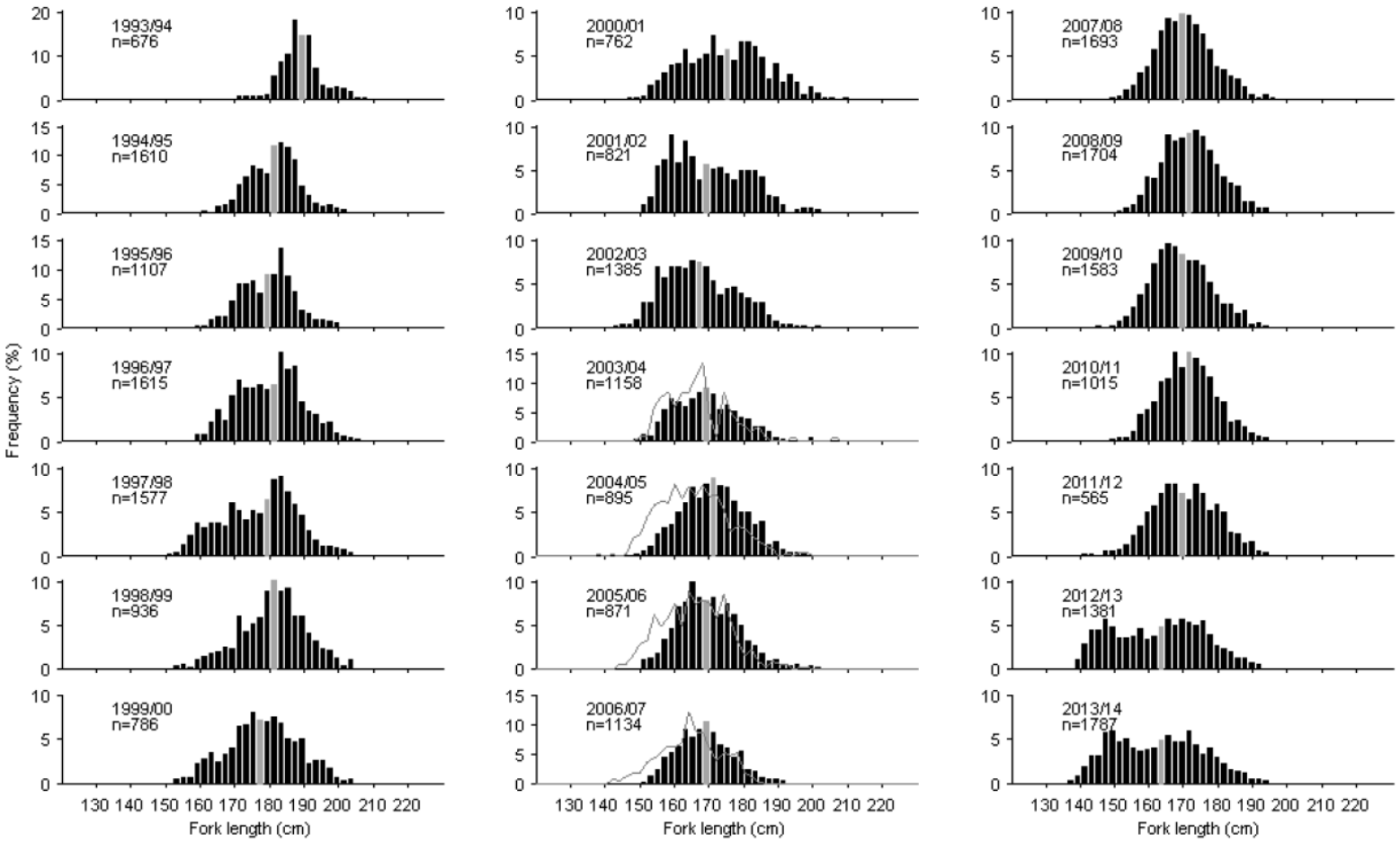
Nominal CPUE of ages 3 through 12+ SBT for Japanese longliners

Lengths on the spawning ground

Indonesian length frequencies

- In 2012 – 13 and 2013 – 14 there was a decline in the mean length of SBT on the spawning ground, with a new mode of relatively small/young fish in the Indonesian catch
- It has not been determined if the catch of smaller fish comes from the spawning ground and if they are mature

Lengths on the spawning ground



Length frequency of SBT caught on the spawning ground by spawning season

Summary of indicators

- The Aerial Survey and SAPUE indices both increased from 2013 to 2014, but the troll index decreased slightly
- Japanese longline CPUE
  - increased for ages 6&7 from 2007 to 2012 and then declined;
  - increased in the last two years for the 8 -11 age group; and
  - decreased for the 12+ age groups from 2008 to 2010 and then remained low
- Mean length of SBT on the spawning ground has declined, but its cause(s) are unknown

Stock assessment and projections

Stock assessment and projections in 2014

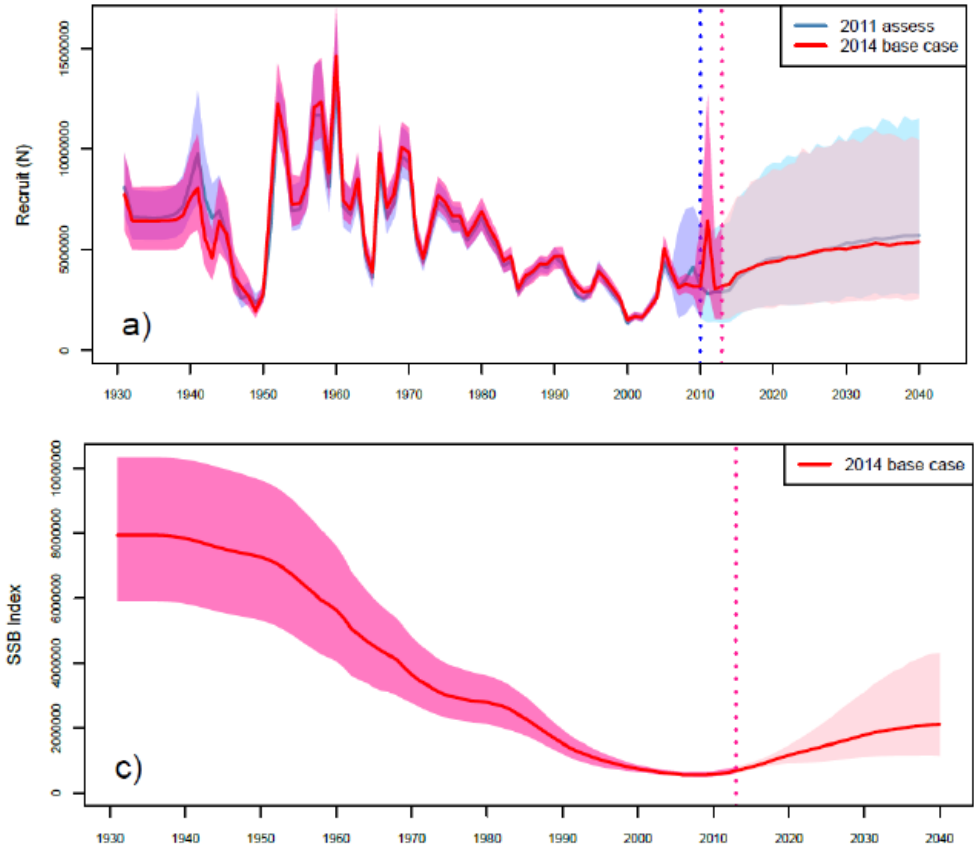
For the Base Case

- The stock remains at a very low level estimated to be 9% of the initial SSB, and below the level to produce maximum sustainable yield (MSY)
- However there has been some improvement since the 2011 stock assessment
- B10+ relative to initial is estimated to be 7% which is up from the estimate of 5% in 2011
- Probability of reaching rebuilding target of 20% B_0 by 2035 was 74%

Summary of stock status from 2014

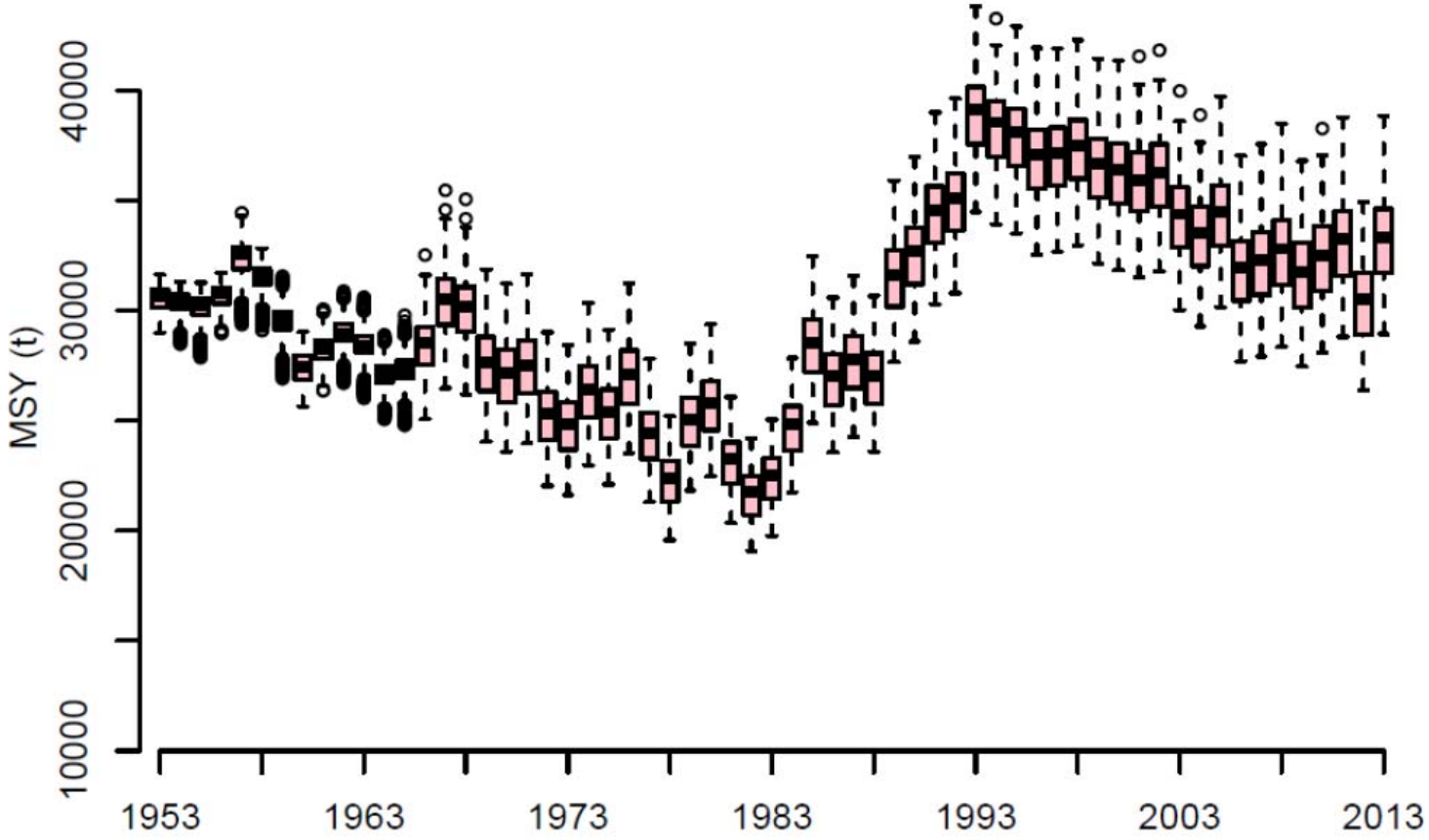
Maximum Sustainable Yield	33,000t (30,000-36,000)
Reported (2013) Catch	11,726t
Current Replacement Yield	44,600t (35,500 – 53,600)
Current (2014) Spawner Biomass (B10+)	83,000t (75,000 – 96,000
Current depletion (current relative to initial)	
• SSB	0.09 (0.08 – 0.12)
• B10+	0.07 (0.06 – 0.09)
SSB (2014) Relative to SSB_{msy}	0.38 (0.26 – 0.70)
F(2013) Relative to F_{msy}	0.66 (0.39–1.00)

Spawning Biomass and Recruitment



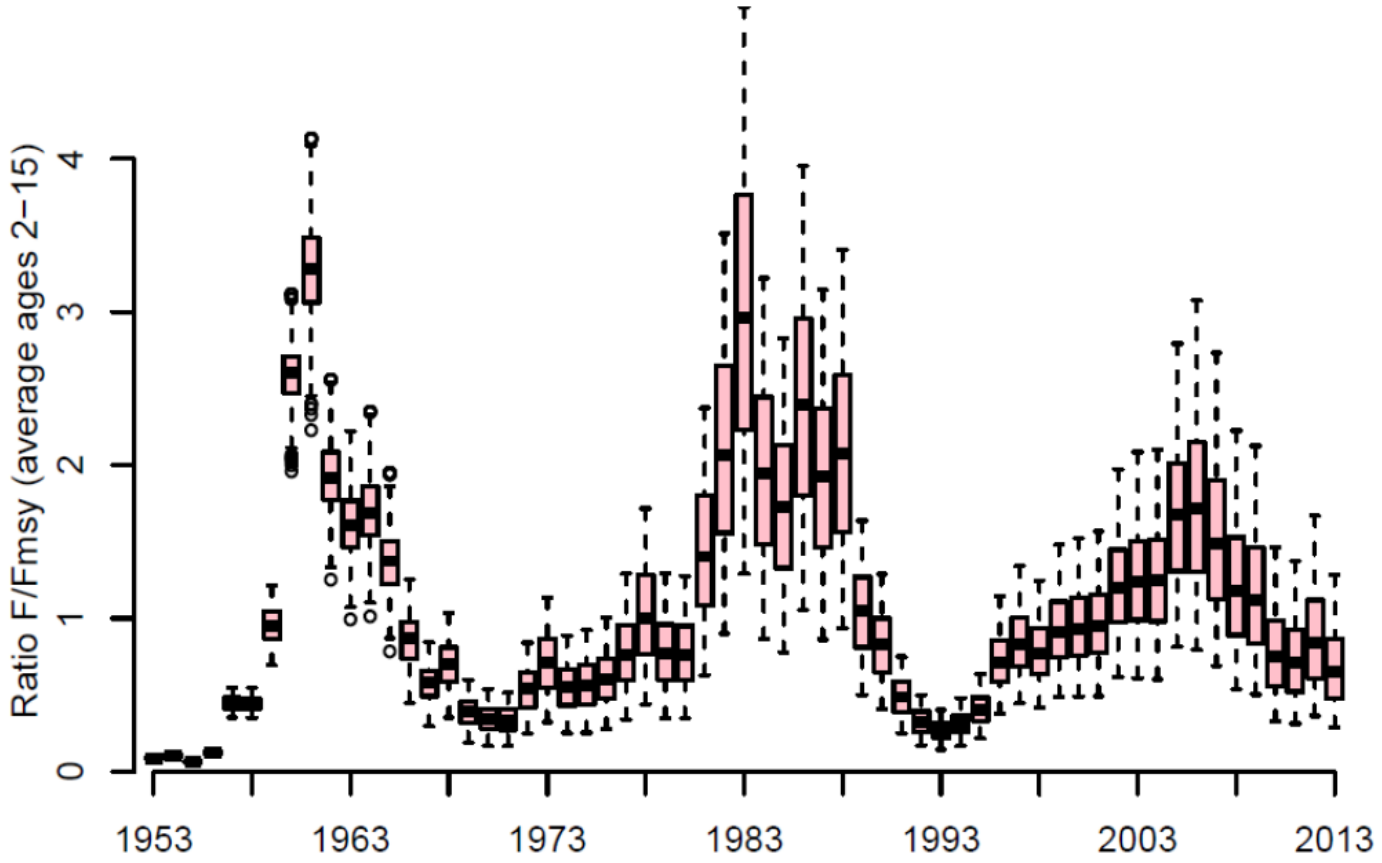
Recruitment and spawning stock biomass for the base case, showing the medians and 90th percentiles. The blue line with the light blue region shows those for the previous assessment calculated in 2011.

Estimates of MSY



Estimated MSY based on annual age-specific mean weight and selectivity estimates as computed over the base grid of the operating model

Estimates of F



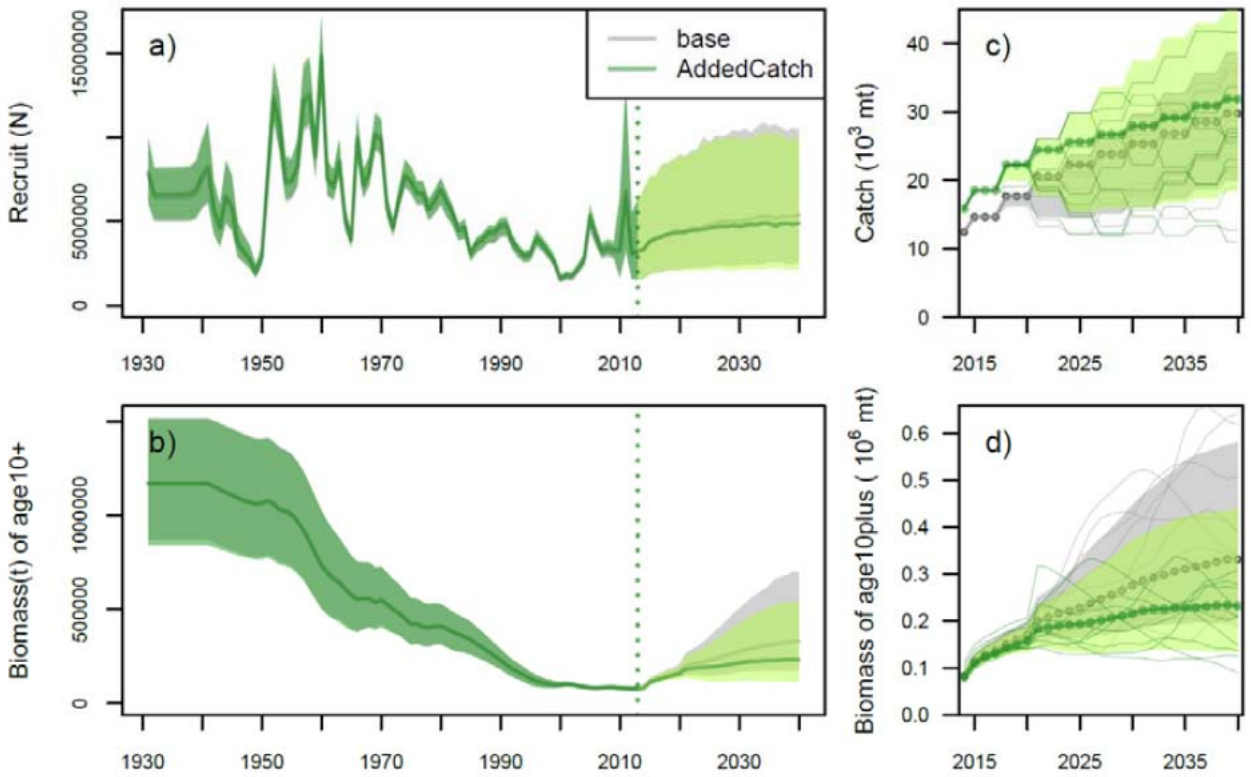
Boxplots of average fishing mortality over the F_{msy} (for ages 2-15)

Unaccounted catch mortality

Unaccounted catch mortality

- Current stock status estimates appear to be unaffected by the unaccounted mortality scenarios tested
- There are impacts on the projections and rebuilding performance from the unaccounted mortality scenarios
- If total mortalities are as large as those considered in the added catch scenario (an added 1000t of large fish plus 1000t of small fish) then impacts on the rebuilding plan may be substantial (probability of rebuilding to 20% B_0 by 2035 drops to 49%)
- Unaccounted mortality of large fish impacts on rebuilding early and of small fish the impact is later

Unaccounted Catch Mortality



Trajectories of a) recruitment, b) biomass of age 10+ fish, c) predicted catch, d) biomass for the “Added Catch” sensitivity scenario.

The green line with the greenish yellow region shows the median and 90% intervals of each scenario. The grey line and region shows the base case result.

Unaccounted catch mortality

- The added catch scenario was potentially plausible given the available data, information and anecdotal market reports
- The probability of rebuilding for this scenario was similar to but not worse than the most pessimistic scenario tested in 2011
- Under the projections of the different scenarios the MP appeared to be working to reduce TACs when unaccounted mortality was occurring, but not enough to meet the rebuilding target
- ESC requests that the EC and CC urgently provide detailed information and data to properly assess impacts of unaccounted mortalities

Unaccounted catch mortality

- ESC has made suggestions in **Attachment 5** in regard to further possible initiatives to improve the estimation of any unaccounted mortality in the surface fishery, of catches by non-members, and of (unreported) catches by members by improved market monitoring
- The ESC encourages all countries to make their CDS data and information on market monitoring available to facilitate and improve analyses
- However, any items related to the details of individual vessels are not required

Unaccounted catch mortality

ESC Members estimating the SBT catch of Non-Members in the IOTC and WCPFC regions by analogy with the SBT catch rates of Members fishing in the same 5 X 5 areas (Attachment 6)

In addition to improve the data available for stock assessment and the MP, the ESC specifically requests:

- CC and EC provide information on catches of SBT by Non-Members
- CC and EC review and analyse market data from Members to improve estimates of catch (both weight and size)
- Members provide their CDS data to the ESC to facilitate and improve analyses

Exceptional Circumstances

Exceptional Circumstances

- In 2011 the CCSBT also adopted the meta-rule process as the method for dealing with exceptional circumstances in the SBT fishery (ESC 2013).
- The meta-rule process describes:

  (1) the process to determine whether exceptional circumstances exist

  (2) the process for action; and

  (3) the principles for action

Exceptional Circumstances

- It appears that significant levels of unaccounted mortality may have occurred which were not considered in the design of the MP
- If these levels are indeed true, they would amount to exceptional circumstances because the probability of rebuilding under the MP will be well below what was intended by the EC
- The ESC also notes that continuing to follow the MP as proposed does lead to continued rebuilding in the short term even if the circumstances of the hypothesised additional unaccounted mortality are true

Exceptional Circumstances

- Hence, the ESC advises the EC to continue to follow the MP as formulated but, as a matter of urgency, to take steps to quantify all sources of unaccounted SBT mortality
- If substantial levels of unaccounted mortality are confirmed, then there will be a need to retune the MP to achieve the EC's stated rebuilding objective
- In addition, the ESC advises that the EC take steps to ensure adherence to its TACs

SBT Assessment and Management

Management Recommendations

Recommendations for 2014

- Based on the results of the MP operation for 2015-17 and the outcome of the application of the meta-rule process, including review of exceptional circumstances, the ESC recommends that:
  - There is no need to revise CCSBT's 2013 TAC decision regarding the TACs for 2016 - 17
  - The recommended annual TAC for 2016 – 17 is 14,647.4 t
- The ESC recommends that an allocation of 5.95 t per year be made to cover mortality associated with approved research projects

Carry-forward of unfished allocations

Carry-forward

- Projections on the impact of carry-forward between three year quota blocks were run for the base case assuming:
  - No carryover (i.e., the standard base run); and
  - Carryover of 20% of the TAC from the third year of each three year block to the first year of the following three year block.
- There was negligible difference between the projections, with carry-forward of unfished allocations between quota blocks having no adverse impact on the outcomes of meeting the rebuilding target (1%)

Carry-forward

- The ESC noted that these calculations were conducted for the current situation where the stock is increasing so that further consideration would be required if the stock was not increasing
- It was further noted that a review of the MP is scheduled for 2017 and that the carry-forward provisions and any other catch-related management changes being considered by the EC should be considered in that review
- The ESC recommended that any catch-related management changes proposed by the EC should be evaluated by the ESC for impact on the performance of MP before such changes are implemented

Scientific Research Program for 2015 - 2017

Scientific Research Program for 2015 - 2017

The ESC identified the following key research areas:

- Improved information on key uncertainties in the Indonesian fishery
- Adult biomass indices
- Recruitment abundance indices
- Estimates of adult mortality
- Estimates of select biological parameters – selectivity, fecundity
- Estimates of total catch
- Preparation for formal review of the MP in 2017

Scientific Research Program for 2015 - 2017

- The costs of the SRP will increase over the three years of the program
- ESC notes that the Performance Review of the CCSBT suggests that CCSBT costs are extremely low compared to the value of the fishery (paragraph 172) and that the cost increase for the 3 year research plan is well justified

Review of the 2015 Work Schedule

ESC Workplan for 2015

The proposed workplan has the following key elements:

- Evaluation of fishery indicators and exceptional circumstances
- Further work on genotyping approaches to inform decisions on longer-term approach
- Expert review workshop on the approaches
- Gene tagging design study
- Aging of otoliths
- Continued collection of close-kin samples
- Scientific aerial survey

2014 -15 Proposed Workplan

Activity	Approximate Period	Resources or approximate budgetary implications[1]
Continuation of tag recovery efforts	Tag recovery is continuous	$1,000 for tag rewards on the basis that few recaptures are expected to occur
Provide SBT Stock Status Report to the other tuna RFMOs	Aug – Nov 2014	No additional cost
Collation of information on unreported mortalities and categorize by "OM" fleets	Jan – Jun 2015	All members
Proposed SRP activities for 2015: 1. Continued collection of close kin (CK) samples 2. Work on genotyping approaches 3. Expert review workshop 4. Design study for future gene-tagging studies 5. Aging Indonesian ototliths 6. Scientific aerial survey	Jan – Dec 2015	1. CCSBT - $35,000 2. CCSBT - $85,000 3. Australia (CSIRO) 4. CCSBT: $75,000 5. CCSBT: $15,000 6. CCSBT: up to $800,000

2014 -15 Proposed Workplan
(continued)

Activity	Approximate Period	Resources or approximate budgetary implications[1]
Routine OMMP code maintenance and development	Jan – Jul 2015 (Data inputs after data exchange)	Australia/Consultant 5 days
CPUE webinar to review progress of inter-sessional CPUE work	April 2015	Japan, Australia, New Zealand, Taiwan, Korea and possibly Indonesia. Three panel days
Standard Scientific Data Exchange	Apr – Jul 2015	No additional cost
Technical workshop to evaluate possible changes in the OM structure	2 days immediately prior to ESC (30-31 Aug.)	Two panel members, 1 Secretariat staff

2013 -14 Proposed Workplan
(continued)

Activity	Approximate Period	Resources or approximate budgetary implications[1]
Extended Scientific Committee for the 19th meeting of the Scientific Committee. The meeting will focus on the following: • Regular review of indicators • Evaluation of application of meta-rules • Review results of SRP activities • Specify requirements for MP review in 2017	1 – 5 Sep 2015 (Incheon, Korea)	ESC Chair, full panel, full interpretation and 3 Secretariat staff.

END