



REPORT OF THE 8th MEETING OF THE CCSBT STOCK ASSESSMENT GROUP AND THE 12th MEETING OF THE SCIENTIFIC COMMITTEE

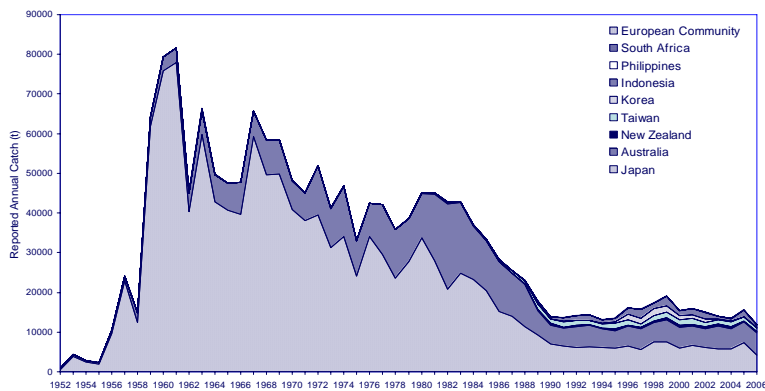
Hobart, 4 - 14 Sep 2007



Review of SBT Fisheries



Reported SBT Global Catches: 1950 - 2006



Reported southern bluefin tuna catches by flag, 1952 to 2006



Issues of Concern Related to Assessment and Management

- Scientific and management implications of possible past over-catches brought to light by the market and farm anomaly reports in 2006 still far outweigh any other concerns.
- The suggested magnitude of past over-catches jeopardizes many of our key indicators, undermines the basis upon which the SBT Operating Model is designed and conditioned, and will require the development of the SBT MP to be re-evaluated.
- Efforts must be made to reduce uncertainties regarding the magnitude and source of any past over-catches, and to provide reasonable estimates of past catch and CPUE trends with which to condition the Operating Model - only limited progress has been made since 2006.
- It is particularly important to continue to ensure that accurate catch data and CPUE indices are obtained from the main SBT fishery sectors in future, for use as fisheries indicators, and to provide reliable indices of abundance.



Review of Fisheries Indicators

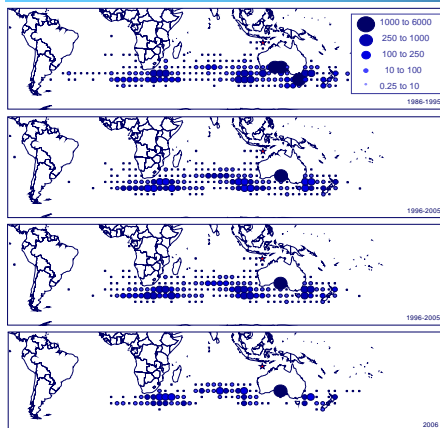


Impact of Catch Anomalies on Indicators

Indicator	Influence of Catch Anomalies
Estimates of past total SBT catch	Affected
CPUE trends in Japanese LL fishery	Affected
CPUE by year/age class in Japanese LL fishery	CPUE affected, Proportions by age potentially affected
Length frequency in Japanese LL Fishery	Potentially Affected
Conventional tagging (LL reporting rates)	Potentially affected
CPUE and length frequency for New Zealand domestic and charter LL fisheries	Unaffected
Indonesian catch, age composition, and CPUE	Unaffected
Fishery independent aerial survey	Unaffected
Commercial spotting index	Unaffected
Acoustic index	Unaffected
Troll survey	Unaffected



SBT Distribution Range: 1976 - 2006



Geographical distribution of average annual southern bluefin tuna catches (t) by CCSBT members and cooperating non-members over the periods 1976-1985, 1986-1995, 1996-2005 and 2006 per 5° block by oceanic region. The area marked with a star is an area of significant non-member catch. Block catches averaging less than 0.25 tons per year are not shown.



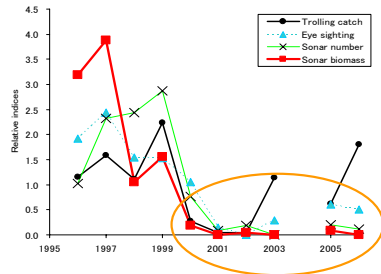
Recruitment Indicators

- **Aerial Surveys:** The aerial spotting survey and commercial spotting index are both consistent with a reduction in average recruitment below 1994 - 1998 levels.
- **Longline CPUE:** Japanese nominal LL CPUE shows poor 2000, 2001, and 2002 year classes, but indicates the 2003 year class may be similar in size to the average between 1980 and 1999.
- **Size Frequency:** Size distribution in the NZ LL fishery and the Japanese LL fishery continue to indicate poor 2000, 2001, 2002 recruitments.
- **Tagging Data:** High mortality rate estimates for age 3 and 4 from recent SRP tagging are consistent with low recruitments in these years.

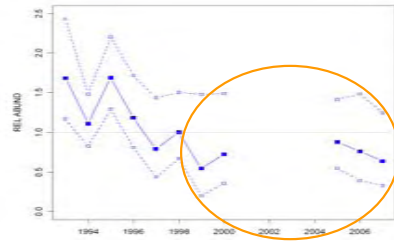
In summary, recruitment indicators continue to support previous evidence for poor recruitment in the 2000 and 2001 year class, and the evidence is now stronger that the 2002 year class was also poor.



Recruitment Indicators



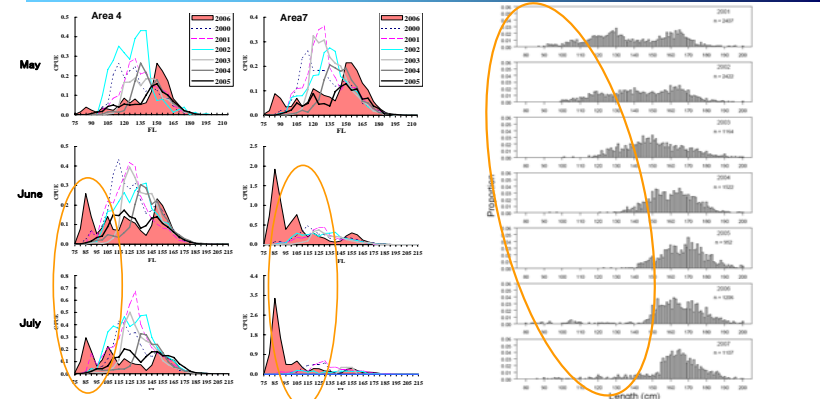
Relative values of four acoustic abundance indices for age 1 SBT off south-western Australia, continuing to show low recruitment after 1999.



Relative abundance from aerial line transect surveys of age 2-4 SBT in the Great Australian Bight, showing lower abundance after 1999.



Recruitment Indicators



Size composition in the Japanese LL fishery from 2000 - 2006 showing reduction of fish from the 1999 - 2001 year classes, but re-appearance of fish <115cm in 2006*.

Length-frequency distribution of SBT in the New Zealand charter catch showing the near absence of fish from cohorts of 1999 onwards, but some small fish in 2006 and 2007.



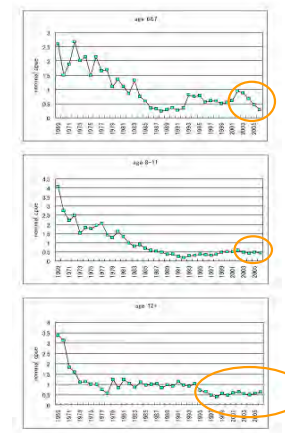
Spawning Biomass Indicators

• **Longline Catch Rates:** Reported catch rates of fish aged 12 and older in the Japanese LL fishery continue to indicate a drop in spawning stock biomass in about 1995, but this is potentially impacted by catch anomalies. Since the Japanese LL CPUE is the primary indicator of stock abundance the potential anomalies make the spawning stock status less certain than last year.

• **Indonesian Catches:** Increase in tonnage of Indonesian catch as well as the increase in proportion of SBT in the Indonesian catch was associated with a shift in the behaviour of the Indonesian fleet to target SBT south of the spawning ground. This change in behaviour complicates the interpretation of the age and size structure of catches from the spawning stock. However, there has been a progressive decrease in the age/size of the fish taken by the Indonesian fleet since 2000-01.



Spawning Biomass Indicators



Nominal CPUE of Japanese LL SBT catches by age group, showing recent declines in catches of 6-7, 8-11 (since 2002) and 12+ (since 1994)*.



Exploitable Biomass Indicators

- **Longline CPUE:** Reported Japanese LL CPUE for all ages combined suggests that the exploitable biomass for these gears has remained fairly constant during the past 10 years, though this level is low compared to historical values.
- Reported CPUE indicates increases in the CPUE of ages 8-11 since about 1992, but a slight decline in 2003 and 2004, with a slight increase in 2005, and 2006 is similar to 2005.
- Reported CPUE of fish aged 4-7 has increased since the mid 1980s but has been declining in recent years.

Confidence in this indicator has diminished considerably due to the uncertainty associated with catch anomalies.



Assessment of Stock Status



Conclusions Regarding Stock Status

- No new model-based assessment was conducted in 2007.
- The fishery indicators do not provide any appreciable sign of change in stock status since 2006.
- Recruitments in the last decade are estimated to be well below the levels in the period 1950 - 1980.
- Analysis of several independent data sources and the scenarios indicate low recruitment in 2000 and 2001 and probably also in 2002 and 2003.



Conclusions Regarding Stock Status

- Results of scenario evaluations in 2006 are generally consistent with the 2005 assessment, and indicate that the SBT spawning biomass is at a low fraction of its original biomass, well below the 1980 level, and below the level that could produce MSY.
- Rebuilding spawning stock biomass would almost certainly increase sustainable yield and provide security against unforeseen environmental effects.



Management Advice



2006 ESC Management Recommendations

To ensure a high probability of sustainability and rebuilding of the SBT spawning stock, three steps are required:

1. An immediate reduction in total catches to below 14,925t to decrease the probability of further stock declines.
2. Immediate action to restore confidence in estimates of total catch and CPUE series. Monitoring of recruitment and of the Indonesian fishery must continue, and where possible, be improved.
3. An interim management procedure needs to be adopted within the next 3-5 years, with a full management procedure thereafter designed to ensure a high probability of stock rebuilding.

(If recruitment indicators in the next few years revert to the low levels of 2000 and 2001, further substantial catch reductions will be required.)



2006 Management Actions

- At CCSBT 13 the Extended Commission agreed to a new TAC of 11,810 t for the three year period from 2007 - 2009.
- Furthermore, both Taiwan and the Republic of Korea undertook to maintain their actual catch at a level below 1000 t each for a minimum of three years, and the actual expected catch level is expected to be below 11,530 t for each year between 2007 and 2009.
- Limited progress has been made towards development of new historical CPUE series, but further work is required to reduce the uncertainty about historical catches.
- Monitoring of the Indonesian fishery and recruitment has continued



2007 Management Recommendations

The ESC made the following management recommendations:

- The indicator analysis did not provide any appreciable signs of change in stock status and hence there is no basis to revise the conclusions from 2006.
- Because the TAC has been set for 2007 - 2009 and no changes are anticipated until 2009, the SAG will need to consider new available information in 2009 and use scenario modelling to evaluate the impact of different future catch levels on stock status.
- To ensure a high probability of stock rebuilding, all unreported catches must be eliminated and a management procedure needs to be adopted as a basis to provide TAC advice in 2011 or 2012.



2007 Management Recommendations

- Further work is needed to reduce the uncertainty about historical catches and CPUE
- Previous MP development assumed that the sole indicator used for input was LL 1 CPUE and its age structure. There is now agreement that future MPs should be based on inputs from a broader range of indicators.
- Accurate catch and effort data are critical to any stock assessment or management procedure and there needs to be assurance that future data are accurate.



Management Procedure Implications



Management Procedure Implications

- The advantages and disadvantages of having an interim (short-term) or longer MP, or both, were discussed.
- A three year TAC was set in 2006 and this will provide an opportunity to examine the effect of a constant TAC on the various indicators.
- Due to the three year TAC, developing a MP was not as high a priority as it was considered to be at the ESC in 2006.
- The ESC endorsed the view that the most benefit would be achieved through making improvements to the conditioning for the operating model over the next two years, rather than rushing the development of an interim MP.



Management Procedure Implications

- The SAG noted that there would be little point in developing a MP unless processes are put in place to ensure that the data used are reliable and accurate
- The SAG/ESC noted the need to ask the Extended Commission whether a MP would be required in 2009.
- TAC advice in 2009 would be provided based on constant-catch projections conducted using the new set of models developed.



Review of the SRP and 2008 Work Schedule



Review of the SRP

The ESC reviewed the following components of the SRP:

- Characterisation of SBT catch.
- CPUE interpretation and analysis
- Scientific observer program
- SBT tagging program
- Recruitment monitoring
- Direct aging
- Other SRP activity



Future SRP activities

- There is still great uncertainty around key aspects of the SBT stock, e.g. absolute abundance, trends in recruitment and spawning stock biomass
- Attachment 9 to the ESC report provides future SRP priorities to address these uncertainties
- The following three activities were highlighted:



Future SRP activities

Catch characterisation

- The magnitude and attribution of past catch anomalies must be rectified as much as possible
- Every effort should be made to ensure that the current efforts to obtain accurate catch estimates continue into the future



Future SRP activities

CPUE

- The historical CPUE data should be explored further, but these approaches may not be able to produce a reliable historical CPUE series - it is unlikely that there will ever be full confidence in the historical data
- Every effort must be made to collect accurate CPUE data in the future



Future SRP activities

Tagging

- Specifically, the ESC recommends that the conventional tag deployments not occur in 2007/08 season because of issues surrounding return of tags, but monitoring of tag returns should continue and efforts made to increase recovery rates.
- Alternative tagging methods will be evaluated in 2008 for possible implementation in 2009.



2008 Proposed Workplan

Activity	Timing	Nature
Report to other RFMOs and FAO	Nov 07	report
Secretariat coordination of the tag returns, including rewards	Ongoing	administrative
Aerial survey of GAB	Jan 08	field work
Workshop to review CPUE if necessary	May 08	workshop
Report of Australian stereo video experiments	May 08	report
Data exchange by all parties	Oct 07 - Jun 08	report
Review revisions in historical catch numbers and size	ESC	report
Report on potential genetic tagging	ESC	report
Report on potential PIT tagging project	ESC	report
Report on potential for spawning and feeding ground surveys	ESC	report
Report on ongoing data collection and analysis: catch, length, age, CPUE, aerial survey, scientific observer program, indicators and archival tagging	ESC	report
Report on potential for integration of direct age in OM	MP workshop	report
MP development, scenario development OM modeling workshop	Sep 08	MP workshop
ESC meeting	Sep 08	meeting



END

