Perspectives from experience with evaluating management procedures for Southern Bluefin Tuna

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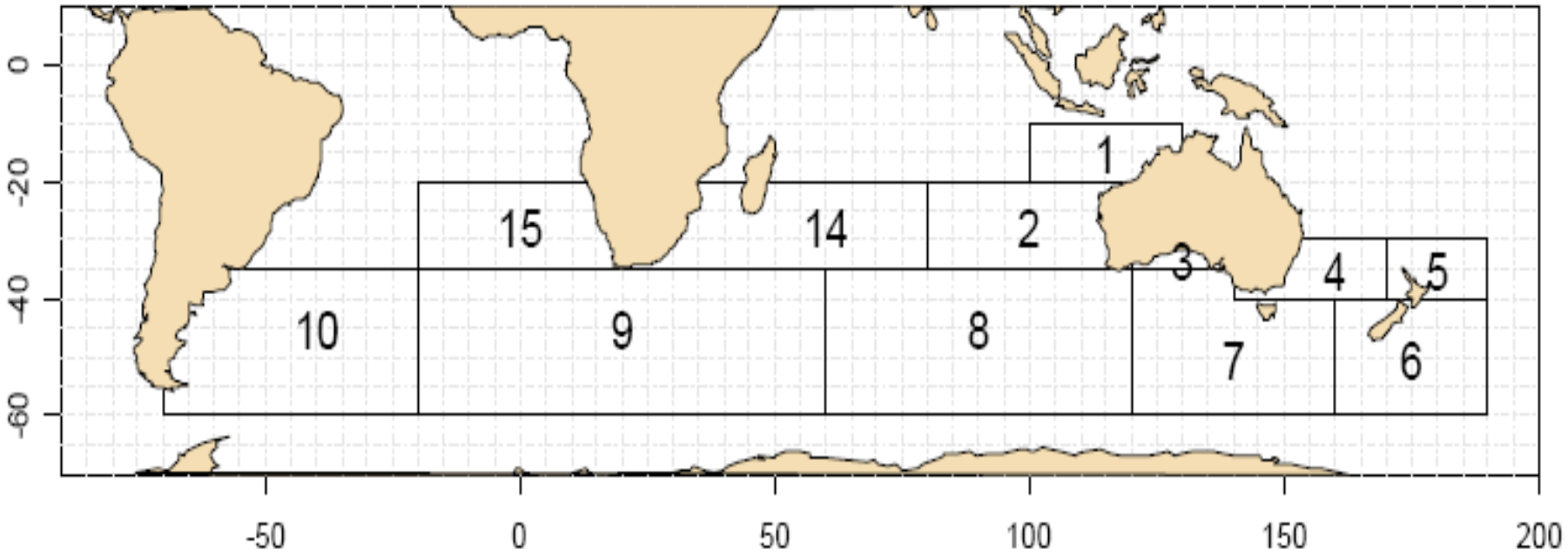
Outline

- Brief overview of SBT biology and fishery
- Why did CCSBT decide to take an Management Procedure approach?
- Experience from the development, evaluation and implementation
- Some observations in the context of tropical tuna and IOTC

Southern Bluefin Tuna

- Truly highly migratory with complex life history
- Juveniles summer in Area 3; winter in Areas 4-8
- Sub-adults/adults winter feeding in Area 9, mostly
- Staging ground in Area 2; Spawning ground in Area 1
- 50% mature at ~12 yrs; commonly 25 yrs+; max. age ~42 yrs



Convention for the Conservation of SBT

- Convention ratified by participants of informal tri-laterals (Japan, Australia and New Zealand)

- Objective - Article 3:

  *"The objective of this Convention is to ensure**, through appropriate management, the conservation and optimum utilisation** of southern bluefin tuna."*

- Silent on MSY
- Entered in to force in 1994

SBT fishery

- International fishery from early 1950s
- Very large catches (peak > 80,000t) from 1960-1980, declines in LL CPUE
- Collapse of SE Australian surface fishery in the mid-1980's
- Informal tri-lateral arrangements from 1980s lead to CCSBT in 1994

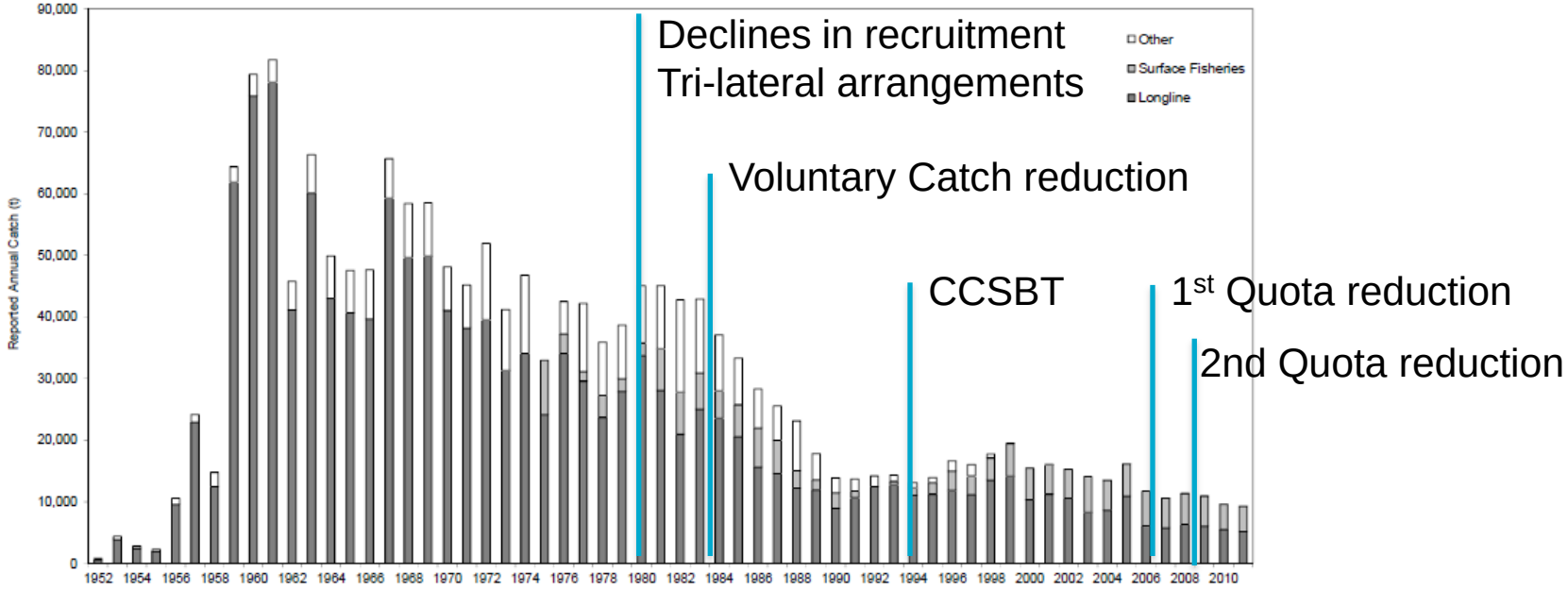
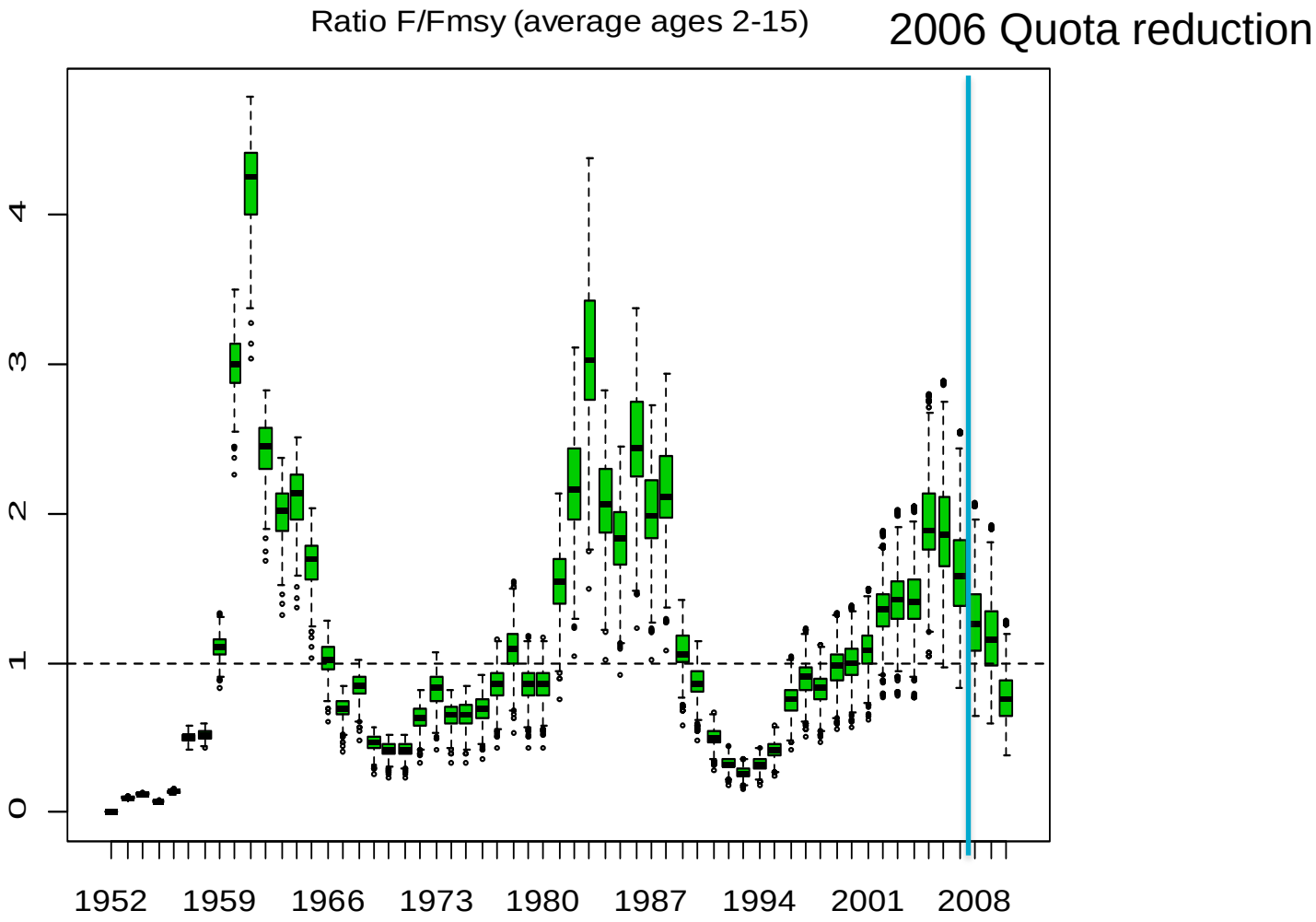


Figure 1: Reported southern bluefin tuna catches by fishing gear, 1952 to 2011. Note: a 2006 review of SBT data indicated that catches over the past 10 to 20 years may have been substantially under-reported.

Science, uncertainty and dispute 1994-2001

- There were divergent scientific views on the status and productivity of the stock and appropriate management action
- In general these related to:
  - Underlying assumptions about spatial dynamics of stock and fishing fleets
  - Relationship between longline CPUE and stock abundance
  - Basic biology (size at age, longevity, natural mortality and maturity schedules)
  - Appropriate methods for estimating stock status and productivity
  - Appropriate approaches for resolving the major uncertainties for the provision of management advice
- Resulted in no agreement on formal TAC for majority of years between 1996-2004.
- Ultimately resulted in formal dispute proceedings in ITLOS

Estimated levels of fishing mortality



Recruitment

Spawning Biomass

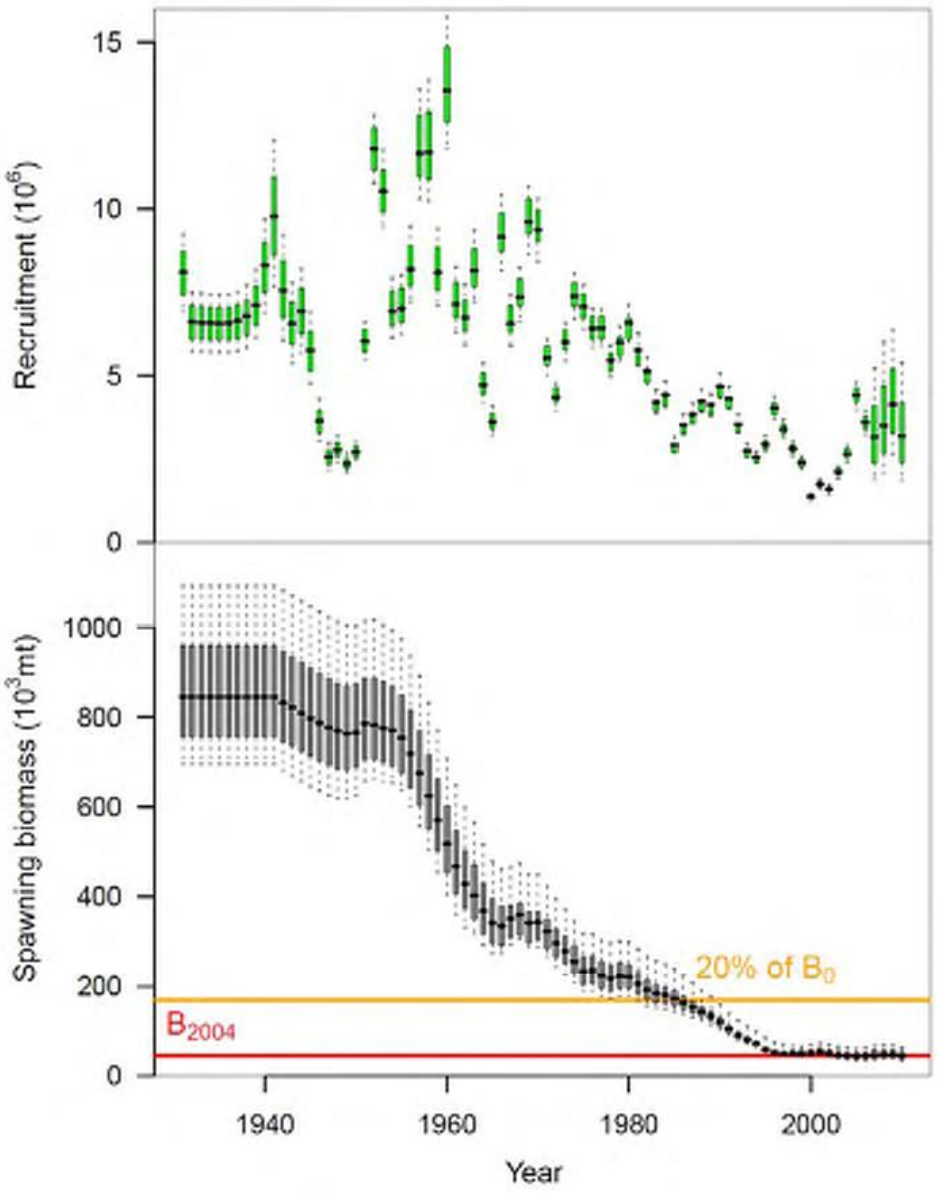


Figure 1. Recruitment and spawning stock biomass for the base case, showing the medians, quartiles and 90th percentiles, together with reference points of 20% of pre-exploitation spawning stock biomass (SSB_0) and the spawning stock biomass in 2004 (SSB_{2004}).

Resolving the scientific dispute

- Agree to disagree, develop framework to incorporate uncertainty
  - Develop an **operating model** which included the plausible alternative stock and fishery dynamics
  - Evaluate **alternative management procedures** and recommend **a robust procedure** that meets the Commissions objectives
- Independent Chairs of Scientific Committee and Stock Assessment Group
- Independent Advisory Panel
  - Chair technical process, including management of **common code**
  - Contribute technical expertise
  - Facilitate consensus within SC, **option to report independent view to Commission**
- **Dedicated process and resourcing** for MP development

MP Round 1 – 2002-06

- Empirical rebuilding objective: SSB_{1980}
- Shifting recovery times: 2020 becomes 2025, becomes 2035
- Operating model development
  - “Reference Set” and “Robustness trials”
  - “Tuning” Management Procedure
- Focus on the things that really make a difference, both in Performance Measures and Robustness trials
- Model-based and empirical decision rules
- Most “acceptable” MP adopted by commission, BUT…
- Nasty surprise!

Unreported catches 2006

- “unreported catches” and “farm anomaly” inserted qualitatively different form of uncertainty.
- Impact on:
  - catch (including size),
  - CPUE from main longline data series
  - size composition from surface fishery
- Independent reviews failed to provide details on sources
- Commission provided range of catch scenarios
- Three year investigation of implications for status and productivity
- SC concluded it could not longer do a stock assessment, in the conventional sense: now does “scenario analysis”

MP Round 2 – 2009-11

- Commission establishes **Strategy and Management WG**
  - Advise Commission on rebuilding strategy and strategic plan
  - **20% SSB_0 "interim rebuilding objective**"
  - 50^{th}, 70^{th} and 90^{th} percentiles for meeting objective requested from SC
  - 2030, 2035 and 2040 provided as rebuilding years
  - Later confirmed 0.7 as tuning probability for meeting rebuilding objective

- OM reconditioned, including new data sources
  - Scientific Aerial Survey data
  - "disaggregated" tagging data from the 1990s
  - New data from fisheries, including 2006 reduction in TAC
  - Updated estimate 3-8% $SSB_{0,}$ several historically low year classes

MP Round 2 – 2009-11

- 2009 TAC reduction by Commission
- Second round of intensive development and testing (Hillary et al presentation)
- 2010 SC MP recommendation:
  - 3 alternative MPs (MP1, MP2, $MP_{average}$)
  - multiple options for size and timing of initial TAC reduction
  - too many options for Commission, come back next year
- 2011 SC MP recommendation: one MP option with limited choice of operational constraints, option for TAC increase
- Adopted, Implemented, two rounds of decisions been made…
- Room for further growth beyond rebuilding objective
  - i.e. estimated MSY > 0.2 SSB_0

In summary

Commission is a ***board of trustees*** advised by the scientific committee

Stock assessment provides **advice on status and productivity** of assets (i.e. the stock) and **current levels of revenue** (i.e. harvest).

Management Procedure is:

- An long-term investment strategy to **rebuild the primary asset** (the SSB).
- It has been evaluated to be provide a **reasonable expectation** of long-term returns/benefits, given the primary objective of rebuilding the capital, and **low probability** of further **severe declines** in productivity.
- It has "meta-rules" and associated actions for unforeseen, or "**exceptional" circumstances**.
- Provides **transparency** and **confidence** to "shareholders" and wider community.
- It recommends a TAC. The **Commission makes the decision**

Observations for IOTC context

SBT is a “special case”

- Single stock, small number of members, primary objective to rebuild, strong technical capacity

Nevertheless, general observations include:

- Informal, *ad hoc* decision making commonly results in overfished stocks and **large losses of long-term benefits**

Development and evaluation of formal MPs/HS:

- **builds essential relationships and understanding** between Commission and Scientific Committee
- **Focuses effort and resources** on issues central to the objectives of the Convention and responsibilities of the Commission and SC
- Independent chair, dedicated work plan and resources for communication with Commission AND Members essential.
- Dialogue with Commission needs to be regular and iterative

Acknowledgements

- Evaluation, adoption and implementation of MP is the result of enormous efforts by a larger range of people across policy, management, industry, NGOs and science with an interest in SBT.
- In particular,
  - Past and present members of SC delegations
  - Past and present members of Commission delegations
  - CCSBT secretariat, especially Brian McDonald and Bob Kennedy
  - Expert Advisory Panel: Ray Hilborn, John Pope, Ana Parma, Jim Ianelli