

Southern Bluefin Tuna (2016)

Thunnus maccoyii



Heather Patterson: Australian Bureau of Agricultural and Resource Economics and Sciences, **Ilona Stobutzki:** Australian Bureau of Agricultural and Resource Economics and Sciences

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth	Global	CCSBT, SBTF	Overfished	Spawning stock biomass, projections of rebuilding

CCSBT Commission for the Conservation of Southern Bluefin Tuna (CTH), SBTF Southern Bluefin Tuna Fishery (CTH)

STOCK STRUCTURE

Southern Bluefin Tuna constitutes a single, highly migratory biological stock that spawns in the north-east Indian Ocean and migrates throughout the temperate southern oceans, supporting a number of international fisheries[1].

Here, assessment of stock status is presented at the biological stock level—global.

STOCK STATUS

Global The biological stock of Southern Bluefin Tuna is fished by Australian fishers endorsed to fish in the Southern Bluefin Tuna Fishery (Commonwealth) and numerous other international jurisdictions. The species is also caught by recreational fishers in the waters off southern Australia, and there are other sources of unaccounted mortalities, including catches by fleets that are not members of the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) [2,3]. The total reported global catch peaked in the late 1950s at about 80 000 tonnes (t) before declining substantially; it has been relatively stable at about 12 000 t since the mid-2000s.

In 2011, the CCSBT adopted a management procedure (analogous to a harvest strategy, evaluated fully using management strategy evaluation) to guide the recovery of the biological stock to 20 per cent of unfished biomass by 2035 with 70 per cent probability. Performance of the management procedure is measured using the biomass of fish that are 10 years and older. Since 2012, the agreed management procedure has been used to determine the global total allowable

catch, which was set at 14 647 t for 2015–17. In line with this, Australia’s total allowable catch for the 2014–15 fishing season was 5665 t, of which 5519 t was landed. The most recent assessment (2014) undertaken by the CCSBT takes into account reported catch from all international jurisdictions[4]. It also examines the sensitivity of the results to alternate estimates of unaccounted fishing mortalities. The current level of unaccounted fishing mortality from all sources is uncertain, but there are indications it may be substantial[3].

By 2000, the stock was estimated to be overfished, and to have declined to a small fraction of the unfished biomass[5]. The most recent assessment estimated that the biomass of fish 10 years and older in the Southern Bluefin Tuna biological stock is still low, at six to nine per cent of unfished levels[4]. The most recent estimate of spawning stock biomass is 8–12 per cent of unfished levels[4]. Based on this evidence, the stock is considered to be recruitment overfished. There may be substantial unaccounted mortality of Southern Bluefin Tuna[4]. Projections of the performance of the management procedure under scenarios of different levels of unaccounted mortalities showed that these mortalities reduce the probability of rebuilding to the specified interim management target to below the required 70 per cent within the specified time frame[4]. Although there has been a slight improvement in the estimated biomass of fish 10 years and older since the last assessment in 2011[6], the biological stock remains recruitment overfished at a global scale, and is well below the interim target level adopted by the CCSBT[2,3,4]. The level of fishing pressure, particularly when accounting for the additional sources of mortality, may prevent the stock from recovering from its recruitment overfished state, in line with the management procedure.

On the basis of the evidence provided above, the global biological stock is classified as an **overfished stock**.

BIOLOGY

Southern Bluefin Tuna biology[7–9]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Southern Bluefin Tuna	40+ years; ~1900 mm <u>FL</u>	~11–12 years; 1580–1630 mm <u>FL</u>

DISTRIBUTION



Distribution of reported commercial catch of Southern Bluefin Tuna

TABLES

Commercial Catch Methods	Commonwealth
Hand Line, Hand Reel or Powered Reels	✓
Pelagic Longline	✓
Pole and Line	✓
Purse Seine	✓
Trolling	✓
Unspecified	✓
Various	✓

Fishing methods	Commonwealth
Commercial	
Pelagic Longline	✓
Pole and Line	✓
Purse Seine	✓
Trolling	✓
Various	✓
Recreational	
Hand Line, Hand Reel	✓

or Powered Reels	
Spearfishing	✓

Management Methods	
	Commonwealth
Commercial	
Area restriction s	✓
Catch limits	✓
Individual transferab le quota	✓
Recreational	
Bag limits	✓
Boat limits	✓

Active Vessels

Catch	
	Commonwealth
Commercial	8831.75t in CCSBT, 5519t in SBTF,
Indigenous	Unknown
Recreational	Tasmania (2007– 08): 14 t (~1.8 per cent error)

CCSBT Commission for the Conservation of Southern Bluefin Tuna (CTH), SBTF Southern Bluefin Tuna Fishery (CTH),

a Commonwealth – Recreational The Australian Government does not manage recreational fishing in Commonwealth waters. Recreational fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters, under its management regulations. Recreational catches reported here are from state surveys during specific time periods, as noted.

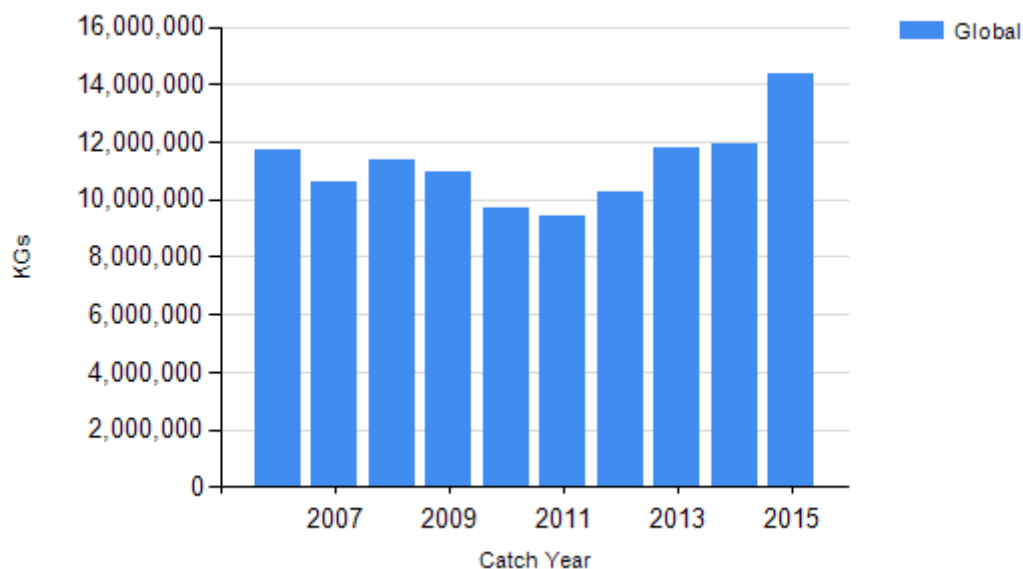
b Recreational Recreational and Indigenous fishing sectors reported here are New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia. A tick indicates that a measure exists in at least one of these jurisdictions.

c Commonwealth – Indigenous The Australian Government does not manage non-commercial Indigenous fishing in Commonwealth waters, with the exception of the Torres Strait. In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters.

d Commonwealth – Commercial (catch) Catches reported for the Commission for the Conservation of Southern Bluefin Tuna (CCSBT) are for 2014, the most recent year available.

e Victoria – Recreational (catch) Unpublished data.

CATCH CHART



Commercial catch of Southern Bluefin Tuna - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Southern Bluefin Tuna was listed as conservation dependent under the *Environment Protection and Biodiversity Conservation Act 1999* in 2010.
- An ecological risk assessment on non-target species in the Australian purse-seine fishery (which caught approximately 90 per cent of Australia’s Southern Bluefin Tuna allocation in the 2014–15 fishing season) found that the risk to the sustainability of non-target species was low[14].
- Australia implements regulations to minimise the environmental impact of fisheries for tuna and tuna-like species on pelagic ecosystems, specifically on seabirds, sea turtles and sharks[15,16].
- Australia has prohibited the practice of shark finning and the use of wire leaders in longline fisheries managed by the Commonwealth, to reduce fishery impacts on sharks[15,16].

ENVIRONMENTAL EFFECTS on Southern Bluefin Tuna

- Interannual variation in abundance of Southern Bluefin Tuna in the Great Australian Bight is well documented. Habitat preference models for the Great Australian Bight have been developed using sea surface temperature and chlorophyll data[17]. These models can predict regions of the Great Australian Bight and Australian south-east coast where the relative abundance of Southern Bluefin Tuna is expected to be the highest.

References	
1	Proctor, CH, Thresher, RE, Gunn, JS, Mills, DJ, Harrowfield, IR and Sie, SH 1995, Stock structure of the Southern Bluefin Tuna, <i>Thunnus maccoyii</i> : an investigation based on probe micro analysis of otolith composition, <i>Marine Biology</i> , 122(4): 511–526.
2	Commission for the Conservation of Southern Bluefin Tuna 2015, <i>Report of the twentieth meeting of the Scientific Committee</i> , Incheon, South Korea, 1–5 September 2015.
3	Patterson, H, Stobutzki, I and Curtotti, R 2016, Southern Bluefin Tuna Fishery, in H Patterson, R Noriega, L Georgeson, I Stobutzki and R Curtotti (eds), <i>Fishery status reports 2016</i> , Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, 391–403.

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Southern Bluefin Tuna (2016)

4	Commission for the Conservation of Southern Bluefin Tuna 2014, <i>Report of the nineteenth meeting of the Scientific Committee</i> , Auckland, New Zealand, 1–6 September 2014.
5	Commission for the Conservation of Southern Bluefin Tuna 2005, <i>Report of the sixth meeting of the Stock Assessment Group</i> , 29 August–3 September 2005, Taipei, Taiwan.
6	Commission for the Conservation of Southern Bluefin Tuna 2011, <i>Report of the sixteenth meeting of the Scientific Committee</i> , Bali, Indonesia, 19–28 July 2011.
7	Davis, T, Farley, J and Gunn, J 2001, <i>Size and age at 50% maturity in SBT: an integrated view from published information and new data from the spawning ground</i> , CCSBT-SC/0108/16, Tokyo, Japan, 28–31 August 2001.
8	Gomon, M, Bray, D and Kuitert, R 2008, <i>Fishes of Australia's south coast</i> , New Holland Publishers, Sydney.
9	Laslett, GM, Eveson, JP and Polacheck, T 2002, A flexible maximum likelihood approach for fitting growth curves to tag-recapture data, <i>Canadian Journal of Fisheries and Aquatic Sciences</i> , 59: 976–986.
10	Forbes, E, Tracey, S and Lyle, L 2009, <i>Assessment of the 2008 recreational gamefish fishery of southeast Tasmania with particular reference to Southern Bluefin Tuna</i> , Tasmanian Aquaculture and Fisheries Institute, University of Tasmania, Hobart.
11	Green, C, Brown, P, Giri, K, Bell, J and Conron, S 2012, <i>Quantifying the recreational catch of southern bluefin tuna off the Victorian coast</i> , Recreational Fishing Grant Program Research Report, Department of Primary Industries, Victoria.
12	Tracey, S, Lyle, JM, Ewing, G, Hartmann, K and Mapleston, A 2013, <i>Offshore recreational fishing in Tasmania 2011/12</i> , Institute of Marine and Antarctic Studies, University of Tasmania, Hobart.
13	Giri, K and Hall, K 2015, <i>South Australian recreational fishing survey 2013–14</i> , Fisheries Victoria Internal Report Series No. 62, Victoria.
14	Zhou, S, Fuller, M and Smith, T 2009, <i>Rapid quantitative risk assessment for fish species in seven Commonwealth fisheries</i> , report for the Australian Fisheries Management Authority, Canberra.
15	Australian Fisheries Management Authority 2016, <i>Eastern Tuna and Billfish Fishery Management Arrangements Booklet: 2016 Fishing Season</i> , AFMA, Canberra.
16	Australian Fisheries Management Authority 2016, <i>Western Tuna and Billfish Fishery Management Arrangements Booklet: 2016 Fishing Season</i> , AFMA, Canberra.
17	Eveson, JP, Hobday, AJ, Hartog, JR, Spillman, CM and Rough, K 2014, <i>Forecasting spatial distribution of Southern Bluefin Tuna habitat in the Great Australian Bight</i> , FRDC Project No. 2012/239, CSIRO Oceans and Atmosphere Flagship, Hobart.