

Yellowfin Tuna (2018)

Thunnus albacares



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth	Indian Ocean	IOTC, WTBF	Depleting	Spawning stock biomass, fishing mortality
Commonwealth	Western and Central Pacific Ocean	ETBF, WCPFC	Sustainable	Spawning stock biomass, fishing mortality

ETBF Eastern Tuna and Billfish Fishery (CTH), IOTC Indian Ocean Tuna Commission (CTH), WCPFC Western and Central Pacific Fisheries Commission (CTH), WTBF Western Tuna Billfish Fishery (CTH)

STOCK STRUCTURE

Tuna in the Indian Ocean, and Western and central Pacific Ocean are considered to be two distinct biological stocks, which are managed under separate regional fisheries management organisations. In the Indian Ocean, although there is some evidence for stock structure that requires further investigation [Kolody et al. 2013], tagging studies have indicated substantial movement of Yellowfin Tuna. A single biological stock is assumed for the stock assessment [Langley 2015]. Currently, a single biological stock is also considered to exist in the western and central Pacific Ocean [Tremblay-Bower et al. 2017]. However, a recent study has provided evidence of genetically distinct populations of Yellowfin Tuna at three sites in the Pacific Ocean [Grewe et al. 2015]. Further and more detailed studies of Yellowfin Tuna stock structure are underway for both the Indian and Pacific Ocean. The Indian Ocean biological stock falls under the jurisdiction of the Indian Ocean Tuna Commission ; and the western and central Pacific Ocean stock falls under the jurisdiction of the . These two commissions are intergovernmental organisations established to manage a number of highly migratory fish species.

Here, assessment of stock status is presented at the biological stock level—Indian Ocean and Western and Central Pacific Ocean.

STOCK STATUS

Indian Ocean The Indian Ocean biological stock of Yellowfin Tuna is fished by Australian fishers endorsed to fish in the Western Tuna and Billfish Fishery (Commonwealth), and members of the Indian Ocean Tuna Commission. The regional stock assessments undertaken by the Indian Ocean Tuna Commission take into account information from all jurisdictions.

In the Indian Ocean, the most recent assessment [IOTC 2017] estimates that the biomass in 2015 of the biological stock was 29 per cent of unfished levels. The biological stock is not considered to be recruitment impaired [Williams et al. 2018]. However, the assessment estimated that fishing mortality was above the level associated with maximum sustainable yield (MSY) (111 per cent of fishing mortality at MSY; range 86–136 per cent). This level of fishing mortality is likely to cause the biological stock to become recruitment impaired [Williams et al. 2018].

On the basis of the evidence provided above, the Indian Ocean biological stock is classified as a **depleting stock**.

Western and Central Pacific Ocean

The Western and central Pacific Ocean biological stock of Yellowfin Tuna is fished by Australian fishers endorsed to fish in the Eastern Tuna and Billfish Fishery (Commonwealth), and members of the Western and Central Pacific Fisheries Commission. The assessments undertaken for the Western and Central Pacific Fisheries Commission take into account information from all jurisdictions.

In the Western and central Pacific Ocean, the most recent assessment [Tremblay-Bower et al. 2017] estimates that the median recent spawning stock biomass was 33 per cent of the unfished level (range 20–41 per cent). There was an eight per cent probability that the spawning stock biomass had breached the limit reference point [WCPFC 2017]. The biological stock is not considered to be recruitment impaired [Larcombe et al. 2018, WCPFC 2017]. This assessment estimated that current fishing mortality was below the level associated with MSY (74 per cent of mortality at MSY; probability interval 62–97 per cent). There was a four per cent probability that the recent fishing mortality was above the level associated with MSY [WCPFC 2017]. This level of fishing mortality is unlikely to cause the biological stock to become recruitment impaired [Larcombe et al. 2018].

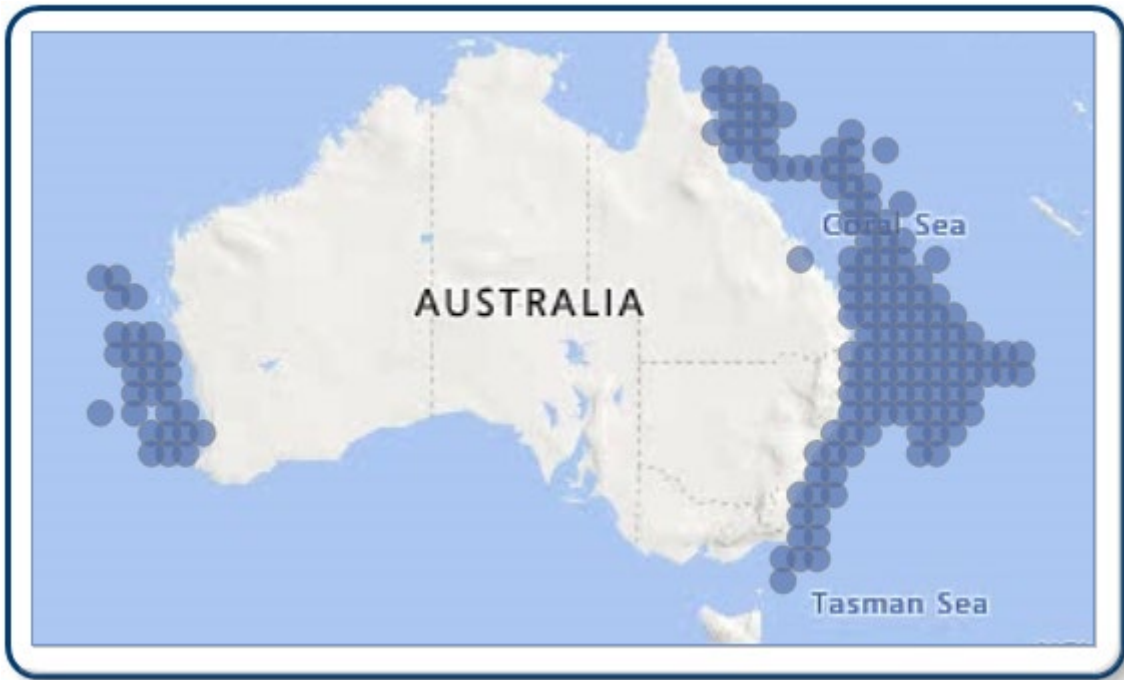
Based on the evidence provided above, the Western and Central Pacific Ocean biological stock is classified as a **sustainable stock**.

BIOLOGY

Yellowfin Tuna biology [Froese and Pauly 2009]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Yellowfin Tuna	9 years, ~1 800 mm FL	~2 years, 1 000 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Yellowfin Tuna

TABLES

Commercial Catch Methods	Commonwealth
Beach Seine	✓
Cast Net	✓
Danish Seine	✓
Fish Trap	✓
Gillnet	✓
Hand Line, Hand Reel or Powered Reels	✓
Handline	✓
Hook and Line	✓
Lift nets	✓
Net	✓
Pelagic Longline	✓
Pole and Line	✓
Purse Seine	✓
Rod and reel	✓
Trawl	✓
Trolling	✓
Unspecified	✓
Various	✓

Fishing methods	Commonwealth
Commercial	

Beach Seine	✓
Danish Seine	✓
Gillnet	✓
Handline	✓
Hook and Line	✓
Pelagic Longline	✓
Pole and Line	✓
Purse Seine	✓
Trawl	✓
Trolling	✓
Various	✓
Recreational	
Hook and Line	✓
Spearfishing	✓

Management Methods	
	Commonwealth
Commercial	
Area restrictions	✓
Catch limits	✓
Gear restrictions	✓
Individual transferable quota	✓
Limited entry	✓
Recreational	
Bag limits	✓
Boat limits	✓

Active Vessels	
	Commonwealth
	38 Vessels in ETBF, 2 Vessels in WTBF,

ETBF Eastern Tuna and Billfish Fishery(CTH)

WTBF Western Tuna Billfish Fishery(CTH)

Catch	
	Commonwealth
Commercial	1713t in ETBF, 439971t in IOTC, 681319t in

	WCPFC, 72t in WTBF,
Indigenous	Unknown
Recreational	Unknown

ETBF Eastern Tuna and Billfish Fishery (CTH), IOTC Indian Ocean Tuna Commission (CTH), WCPFC Western and Central Pacific Fisheries Commission (CTH), WTBF Western Tuna Billfish Fishery (CTH),

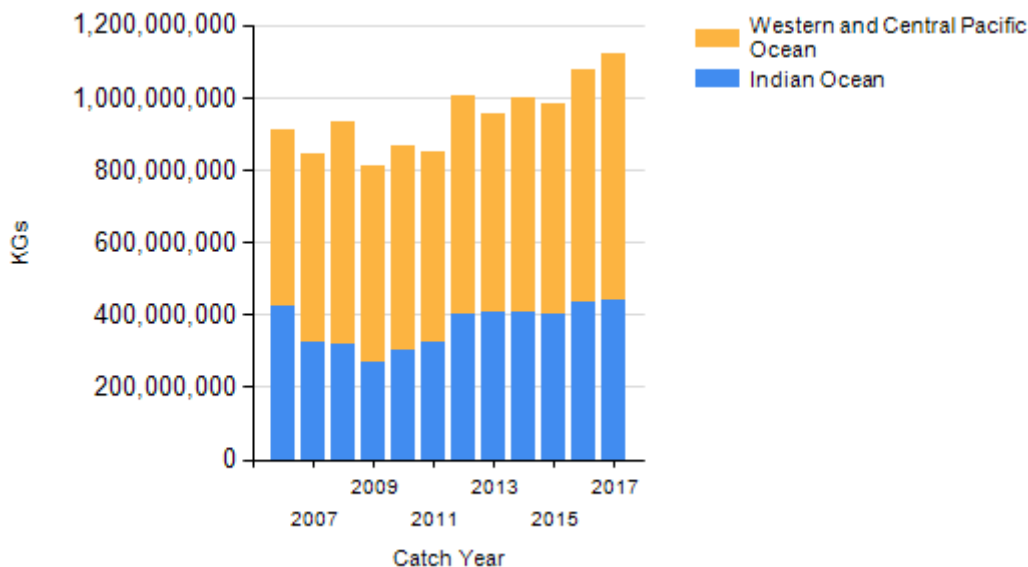
Commercial (catch) Catches reported for the Indian Ocean Tuna Commission and Western and Central Pacific Fisheries Commission are for 2016, the most recent year available; data for the Eastern Tuna and Billfish Fishery and Western Tuna Billfish Fishery are for 2017.

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.

Commonwealth Recreational and Indigenous Recreational and Indigenous fishing sectors in the Indian Ocean are Western Australia, South Australia and Victoria; recreational sectors in the Pacific Ocean are Queensland, New South Wales and Tasmania. Measures listed here exist in one of these jurisdictions.

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.

CATCH CHART



Commercial catch of Yellowfin Tuna - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Yellowfin Tuna

References	
599	Kolody, D, Grewe, P, Davies, C and Proctor, C 2013, Are Indian Ocean tuna populations assessed and managed at appropriate spatial scales? A brief review of the evidence and implications, working paper IOTC-2013-WPTT-15-13, Indian Ocean Tuna Commission Working Party on Tropical Tunas 15th session, Spain, 23–28 October 2013.
600	Langley, A 2015, Stock assessment of Yellowfin Tuna in the Indian Ocean using Stock

	Synthesis, working paper IOTC-2015-WPTT17-30, Indian Ocean Tuna Commission Working Party on Tropical Tunas 17th session, Montpellier, France, 23–28 October 2015.
601	Tremblay-Boyer, L, McKechnie, S, Pilling, G & Hampton, J 2017, 'Stock assessment of yellowfin tuna in the western and central Pacific Ocean, working paper WCPFC-SC13-2017/SA-WP-06, WCPFC Scientific Committee thirteenth regular session, Rarotonga, Cook Islands, 9–17 August 2017.
602	Grewe, P, Feutry, P, Hill, PL, Gunasekera, RM, Schaefer, KM, Itano, DG, Fuller, DW, Foster, SD and Davies, CR 2015, Evidence of discrete yellowfin tuna (<i>Thunnus albacares</i>) populations demands rethink of management for this globally important resource, <i>Scientific Reports</i> , 5: doi 10.1038/srep16916.
603	Indian Ocean Tuna Commission 2017, Report of the twentieth session of the Scientific Committee, Mahe, Seychelles, 30 November–4 December 2017.
604	Williams, A, Patterson, H and Mobsby, D 2018, Western Tuna and Billfish Fishery, in H Patterson, J Larcombe, S Nicol and R Curtotti (eds), <i>Fishery status reports 2018</i> , Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, pp 404–421.
605	Western and Central Pacific Fisheries Commission 2017, Summary report of the thirteenth regular session of the Scientific Committee for the Western and Central Pacific Fisheries Commission, Rarotonga, Cook Islands, 9–17 August 2017.
606	Larcombe, J, Patterson, H and Mobsby, D 2018, Eastern Tuna and Billfish Fishery, in H Patterson, J Larcombe, S Nicol and R Curtotti (eds), <i>Fishery status reports 2018</i> , Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, pp 359–382.
607	Froese, R and Pauly, DE 2009, FishBase, version 06/2016, FishBase Consortium. www.fishbase.org