

Albacore (2020)

Thunnus alalunga



Heather Patterson: Australian Bureau of Agricultural and Resource Economics and Sciences

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth	Indian Ocean	Depleting	Spawning stock biomass, fishing mortality
Commonwealth	South Pacific Ocean	Sustainable	Spawning stock biomass, fishing mortality

STOCK STRUCTURE

Albacore in the Indian Ocean, and Western and Central Pacific Ocean are considered to be two distinct biological stocks, and are managed by separate regional fisheries management organisations. The Indian Ocean stock falls under the jurisdiction of the Indian Ocean Tuna Commission (IOTC) while the Western and Central Pacific Ocean stock under the jurisdiction of the Western and Central Pacific Fisheries Commission (WCPFC). These two commissions are international organisations established to manage a number of highly migratory fish species within their defined geographic ranges.

Recent genetic and morphometric work suggests that Albacore in the southwest Indian Ocean and southeast Atlantic Ocean comprise distinct stocks [Nikolic et al. 2020]. In addition, a preliminary analysis from a recent genetics and otolith microchemistry study of a relatively large sample suggests a single stock within the Indian Ocean [Davies et al. 2019]. Albacore migrate within ocean basins in association with oceanic gyres. Given that the Indian Ocean contains only a single oceanic gyre, a single stock of Albacore is assumed for the Indian Ocean assessments [Langley and Hoyle 2016]. The two oceanic gyres in the Pacific Ocean are assumed to separate Albacore into a North Pacific and South Pacific stock [Nikolic et al. 2017]. However, there is some recent evidence for genetic structuring in the southwest Pacific Ocean [Anderson et al. 2019].

STOCK STATUS

Indian Ocean The Indian Ocean biological stock is fished by Australian fishers endorsed to fish in the Western Tuna and Billfish Fishery (Commonwealth), as well as vessels from numerous other international jurisdictions.

The assessments undertaken by the Indian Ocean Tuna Commission take into account information from all jurisdictions, including the high seas. The most recent assessment [IOTC 2019] estimates that spawning biomass in 2017 was 26 per cent of the 1950 (assumed unfished) level. The biological stock is not considered to be recruitment impaired [Williams et al. 2020]. The assessment estimated that fishing mortality in 2017 was 135 per cent of the level that would produce maximum sustainable yield (MSY) (95 per cent confidence interval 59–217 per cent). This level of fishing mortality is likely to cause the biological stock to become recruitment impaired [Williams et al. 2020].

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

South Pacific Ocean

The South Pacific Ocean biological stock is fished by Australian fishers endorsed to fish in the Eastern Tuna and Billfish Fishery (Commonwealth), as well as vessels from numerous other international jurisdictions.

The assessments undertaken for the Western and Central Pacific Fisheries Commission take into account information from all jurisdictions. The most recent assessment [Tremblay-Boyer et al. 2018] estimates that spawning biomass in 2016 was 52 per cent of unfished biomass (80 per cent confidence interval 37–69 per cent across the grid of models used). The biological stock is, therefore, not considered to be recruitment impaired [Larcombe et al. 2020]. The assessment estimated fishing mortality (2012–15 average) to be 20 per cent of the fishing mortality that will support the MSY (80 per cent confidence interval 8–41 per cent across the grid of models used). This level of fishing mortality is unlikely to cause the biological stock to become recruitment impaired [WCPFC 2019].

On the basis of the evidence provided above, the South Pacific Ocean biological stock is classified as a **sustainable stock**.

BIOLOGY

Albacore biology [Farley et al. 2012, Farley et al. 2014, Williams et al. 2012]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Albacore	14+ years, ~1270 mm FL	4.5 years, ~870 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Albacore

TABLES

Fishing methods	Commonwealth	New South Wales	South Australia	Tasmania	Victoria
Commercial					
Longline (Unspecified)	✓				
Recreational					
Hook and Line		✓	✓	✓	✓

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

Catch	Commonwealth	New South Wales	South Australia	Tasmania	Victoria
Commercial	940 t				
Recreational		unknown	unknown	unknown	unknown

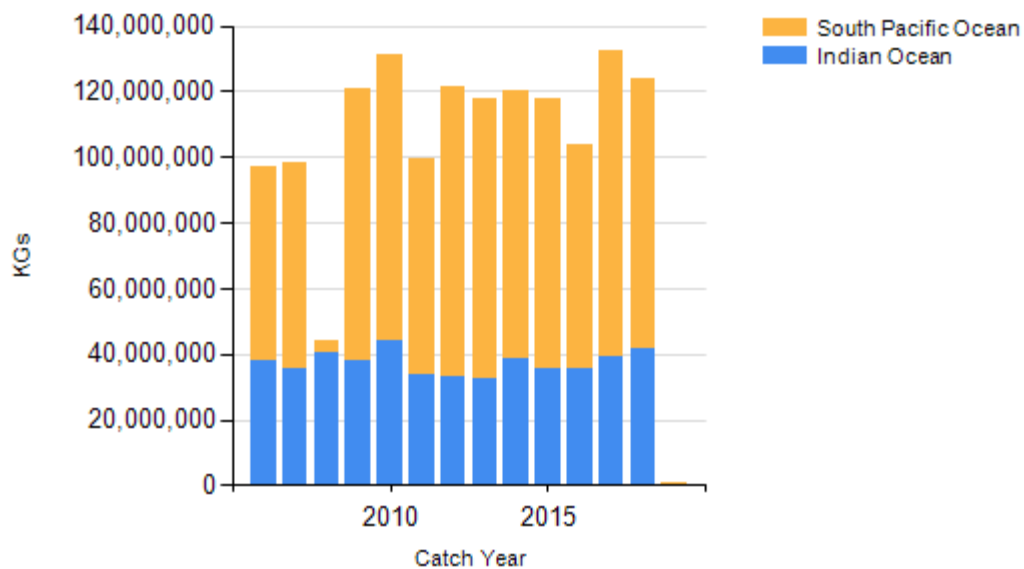
Commonwealth – Commercial (catch) Catches reported for the Indian Ocean Tuna Commission and Western and Central Pacific Fisheries Commission are for 2018, the most recent year available. WCPFC catches are for the South Pacific Ocean (south of the equator); data for ETBF and WTBF are for 2018/2019.

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 South Australia, Victoria and Western Australia. Recreational sectors in the Pacific Ocean are New South Wales, Queensland and Tasmania. Measures listed here exist in at least one of the 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 Albacore - note confidential catch not shown

References

Farley et al. 2012	Farley, JH, Williams, AJ, Davies, CR, Clear, NP, Eveson, PJ, Hoyle, SD and Nicol, SJ 2012, Population biology of albacore tuna in the Australian region, FRDC Project No. 2009/012 final report, CSIRO Marine and Atmospheric Research, Hobart.
Farley et al. 2014	Farley, JH, Hoyle, SD, Eveson, JP, Williams, AJ, Davies, CR and Nicol SJ 2014, Maturity ogives for South Pacific albacore tuna (<i>Thunnus alalunga</i>) that account for spatial and seasonal variation in the distributions of mature and immature fish, PLoS ONE 9(1): e83017. 10.1371/journal.pone.0083017.
Larcombe et al. 2020	Larcombe, J, Patterson, H and Mobsby, D 2020, Eastern Tuna and Billfish Fishery, in H Patterson, A Williams, J Woodhams and R Curtotti (eds), Fishery status reports 2020, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, 377–399.
Nikolic et al. 2017	Nikolic, N, Morandeau, G, Hoarau, L, West, W, Arrizabalaga, H, Hoyle, S, Nicol, SJ, Bourjea, J, Puech, A, Farley, J, Williams, AJ and Fonteneau A 2017, Review of albacore tuna, <i>Thunnus alalunga</i> , biology, fisheries and management. Reviews in Fish Biology and Fisheries, 27(4): 775–810.
Tremblay-Boyer et al. 2018	Tremblay-Boyer, L, Hampton, J, McKechnie S and Pilling, G 2018, Stock assessment of South Pacific albacore tuna. Working paper WCPFC-SC14-2018/ SA-WP-05, fourteenth regular session of the Scientific Committee, Busan, South Korea, 8–16 August 2018.
Western and Central Pacific Fisheries Commission 2019	Western and Central Pacific Fisheries Commission 2019, Summary report for the fifteenth regular session of the Scientific Committee, Pohnpei, Federated States of Micronesia, 12–20 August 2019.
Williams et al. 2012	Williams, AJ, Farley, JH, Hoyle, SD, Davies, CR and Nicol SJ 2012, Spatial and sex-specific variation in growth of albacore tuna (<i>Thunnus alalunga</i>) across the South Pacific Ocean, PLoS ONE 7(6): e39318. doi:10.1371/journal.pone.0039318.
Williams et al. 2020	Williams, A, Patterson, H and Mobsby, D 2020, Western Tuna and Billfish Fishery, in H Patterson, J Larcombe, J Woodhams and R Curtotti (eds), Fishery status reports 2020, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra, 421–438.
Indian Ocean Tuna Commission 2019	Indian Ocean Tuna Commission 2019, Report of the twenty-second session of the Scientific Committee, Karachi, Pakistan, 2-6 December 2019.
Langley and Hoyle 2016	Langley, A and Hoyle, SD 2016, Stock assessment of albacore tuna in the Indian Ocean using Stock Synthesis, working paper IOTC-2016-WPTmT06-25, Indian Ocean Tuna Commission 6th Working Party on Temperate Tunas, Shanghai, China, 18–21 July 2016.
Davies et al. 2019	Davies, C, Marsac, F, Murua, H, Fraile, I, Fahmi, Z, Farley, J, Grewe, P, Proctor, C, Clear, N, Lansdell, M, Aulich, J, Feutry, P, Cooper, S, Foster, S, Rodríguez-Ezpeleta, N, Artetxe, I, Nikolic, N, Krug, I, Mendibil, I, Agostino, L, Labonne, M, Darnaude, A, Arnaud-Haond, S, Wudiano, Ruchimat, T, Satria, F, Lestari, P, Taufik, M, Priatna, A, & Zamroni, A 2019, 'Study of population structure of IOTC species and sharks of interest in the Indian Ocean using genetics and microchemistry: an update on progress and preliminary results', paper submitted to the Scientific Committee Meeting, IOTC-2019-SC22-INFO-05, Karachi, Pakistan, 2 to 6 December 2019.
Anderson et al. 2019	Anderson, G, Hampton, J, Smith, N and Rico, C 2019, Indications of strong adaptive population genetic structure in albacore tuna (<i>Thunnus alalunga</i>) in the southwest and central Pacific Ocean. Ecology and Evolution, 9:10354-10364.
Nikolic et al. 2020	Nikolic, N, Montes, I, Lalire, M, Puech, A, Bodin, N, Arnaud-Haond, S, Kerwath, S, Corse, E, Gaspar, P, Hollanda, S, Bourjea, J, West, W and Bonhommeau, S 2020, Connectivity and population structure of albacore tuna across southeast Atlantic and southwest Indian Oceans inferred from multidisciplinary methodology. Scientific Reports, 10:15657, doi:10.1038/s41598-020-72369-w.