

Bronze Whaler (2023)

Carcharhinus brachyurus



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth, Western Australia, New South Wales, Victoria, South Australia	Southern Australia	Undefined	

STOCK STRUCTURE

South Australia approximates the centre of the Australian distribution of the Bronze Whaler (*Carcharhinus brachyurus*) [Last and Stevens 2009]. The Bronze Whaler is highly mobile, seasonally migratory and has a cosmopolitan warm-temperate distribution [Last and Stevens 2009]. Adult and juvenile sharks inhabit coastal and shelf waters of the west, south and east coasts of Australia between approximately Coffs Harbour in New South Wales and Geraldton in Western Australia [Last and Stevens 2009]. Information on the genetic structure of the population suggests that the Indian Ocean is a geographical barrier to gene flow between Australia and South Africa [Benavides et al. 2011]. Within Australian waters, genetic analyses indicate there is a well-mixed stock ranging between western, southern and eastern Australia. Analyses using single-nucleotide polymorphisms (SNPs) provided some support for a potential separation of Western Australia from the rest of Australia and New Zealand (based on neutral loci only), however, this was only based on two (Augusta, Western Australia) of 103 samples [Junge et al. 2019] and should be treated with caution. Movement processes underlying the preliminary stock structure hypothesis (panmixia) have been studied using telemetry techniques at a range of spatial and temporal scales. The South Australian gulfs form important seasonal foraging habitats in spring-summer [Rogers et al. 2012], with juveniles and adults [Rogers et al. 2013; Drew et al. 2019] moving out of both Spencer Gulf [Rogers and Drew 2018] and Gulf St Vincent during autumn [Drew et al. 2017]. Long-distance migrations were documented across Southern Australia with Bronze Whalers forming a single biological stock spanning from Western Australia to New South Wales [Rogers et al. 2013; Huvneers et al. 2021].

Based on available evidence including seasonal catch and tagging patterns, genetic population structure, and movement patterns determined from conventional and electronic telemetry, Bronze Whaler is assessed here as a single biological stock spanning South Australia, Victoria, New South Wales, southern Queensland at the species range limits, and Western Australia. Additionally, Bronze Whaler inhabits Commonwealth waters adjacent to these jurisdictions).

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

STOCK STATUS

Southern Australia

Most of the undifferentiated whaler shark catch is harvested in South Australia by the commercial multi-species, multi-gear and multi-sectoral Marine Scalefish Fishery (MSF) [Smart et al. 2023]. The main gear-type used is longlines (approximately 80%), although other gear types including droplines and handlines are also used. Fishery logbook data in the MSF do not resolve catches of Bronze Whaler and Dusky Shark to the species level. This lack of resolution at the species level is the main source of uncertainty hampering formal stock assessment for Bronze Whaler [Smart et al. 2023]. Short-term, fishery-dependent sampling programs found the mixed whaler shark catches in the MSF were predominantly comprised of Bronze Whalers (80–96%), with Dusky Shark (*Carcharhinus obscurus*) making up the remainder of observed catches [Rogers et al. 2013; Drew et al. 2017]. Annual total commercial catches range from 33 to 155 tonnes (t), with an average of 80 t per year between 1999–00 and 2021–22. The reported unspecified whaler shark catch in the MSF was 70 t in 2021–22, which represented the highest annual catch in ten years. In South Australia, population productivity and susceptibility to different harvest fractions was determined by Bradshaw et al. (2018) using Leslie matrix models. However, these models do not include catches from all sectors or jurisdictions, nor do they provide enough information to estimate biomass or exploitation rates.

Information on the recreational take of whaler sharks (assumed to be mostly Bronze Whaler) is limited to nominal catch data. In 2021–22, an estimated 1,292 whaler sharks were caught, with 1,154 released (89%) during the most recent survey [Beckmann et al. 2023]. The South Australian Charter Boat Fishery (CBF) reported harvesting more than 40 whaler sharks per year for an overall total of 194 between 2007–08 and 2018–19. No recent whaler shark catch data were available from the CBF [Durante et al. 2022]. There were no data available on the Indigenous catch, although anecdotal evidence suggests small numbers are taken annually from the shore for subsistence purposes.

Among Commonwealth fisheries, Bronze Whalers are predominately taken as non-target and by-product species in sectors of the Southern and Eastern Scalefish and Shark Fishery (SESSF), with catch also reported in the Eastern Tuna and Billfish Fishery (ETBF) and the Western Tuna and Billfish Fishery (WTBF). Total annual commercial catches for the combined Commonwealth fisheries over the last decade were < 30 t per year (2012–13 to 2021–22 financial years), with the total commercial catch of 29 t in 2020–21 and 16 t in 2021–22 financial years.

In Western Australia, Bronze Whalers are predominately taken in the Temperate Demersal Gillnet and Demersal Longline Fisheries. The main shark species captured in these fisheries are Gummy Shark (*Mustelus antarcticus*), Dusky Shark, Whiskery Shark (*Furgaleus macki*) and Sandbar Shark (*Carcharhinus plumbeus*). Bronze Whalers constitute a small component of the catch. Species-specific records of Bronze Whalers are available since 1998, averaging 52 t per

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year for the last 10 years. The recreational catch level is negligible [Ryan et al. 2019].

Bronze Whaler catches in New South Wales fisheries have consistently been below 22 t per year since 2009 when new species-specific logbook reporting was initiated. During recent years, the catch has been < 20 t per year, with 18 t reported caught in 2021–22. The recreational catch is negligible [Murphy et al. 2020]. There is no knowledge on levels of Indigenous harvest, however it is also likely to be negligible.

Commercial Bronze Whaler landings in Victoria are generally < 1 t. The species is targeted and taken as by-product by recreational fisheries but there is no reported information on landings.

There is no published stock assessment for the Southern Australia Bronze Whaler stock, and there are no data available to estimate biomass or exploitation rates. In addition, there is no knowledge on recruitment or harvestable biomass, and there are no defined target or limit reference levels. This prevents assessment of current stock size or fishing pressure. Consequently, there is insufficient information available to confidently classify the status of this stock.

On the basis of the evidence provided above, the Southern Australia biological stock is classified as an **undefined stock**.

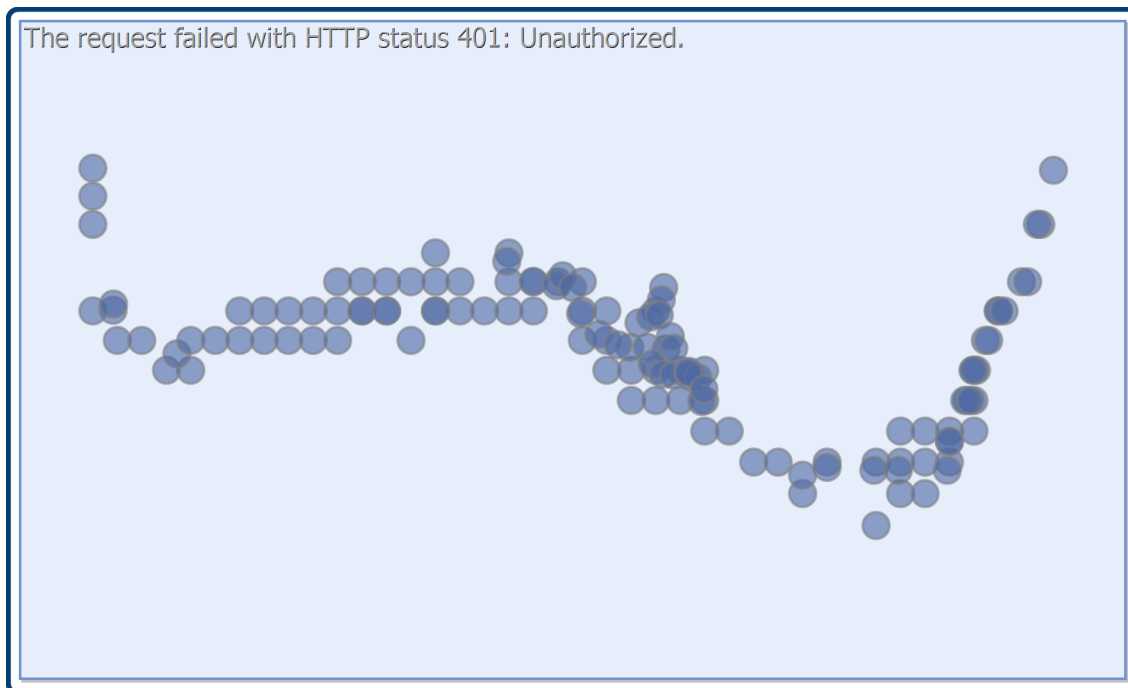
BIOLOGY

Bronze Whaler biology [Drew et al. 2017]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Bronze Whaler	South Australia. Females 31 yrs, 3,080 mm TL; Males 25 yrs, 2,810 mm TL.	South Australia. Females 16 yrs, 2,700 mm TL; Males 16 yrs, 2,240 mm TL.

DISTRIBUTION

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Distribution of reported commercial catch of Bronze Whaler

TABLES

Fishing methods	Commonwealth	New South Wales	South Australia	Victoria	Western Australia
Charter					
Hook and Line					✓
Commercial					
Demersal Gillnet	✓				
Demersal Longline	✓	✓			
Dropline		✓	✓		
Fish Trap		✓			
Gillnet					✓
Handline			✓		
Hook and Line		✓		✓	
Longline (Unspecified)					✓
Mesh Net		✓			
Net				✓	

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Otter Trawl	✓	✓			
Set longline			✓		
Trotline		✓			
Unspecified			✓		
Various		✓			
Recreational					
Hook and Line		✓			✓

Management Methods				
	New South Wales	South Australia	Victoria	Western Australia
Charter				
Bag and boat limits		✓		
Bag limits			✓	✓
Charter licensing		✓		
Gear restrictions			✓	
Licence (boat-based sector)				✓
Limited entry (Charter only)		✓		
Marine park closures			✓	
Size limit				✓
Spatial closures				✓
Commercial				
Effort limits	✓			
Effort limits (individual transferable effort)				✓
Fishing gear and method restrictions		✓		
Gear restrictions	✓			✓
Gillnet restrictions		✓		

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License		✓		
Limited entry	✓			✓
Limited entry (licensing)		✓	✓	
Processing restrictions	✓			✓
Size limit				✓
Spatial closures	✓		✓	✓
Recreational				
Bag and boat limits		✓		
Bag limits	✓		✓	✓
Gear restrictions	✓		✓	✓
Licence (boat-based sector)				✓
Marine park closures			✓	
Size limit				✓
Spatial closures				✓

Catch	Commonwealth	New South Wales	South Australia	Victoria	Western Australia
Charter					Negligible
Commercial	16.1914 t	18.2844 t	69.1868 t	0.419 t	74.3167 t
Indigenous		Unknown but likely to be negligible			Unknown but likely to be negligible (Henry & Lyle 2003)
Recreational		Unknown	138 individuals retained (2021–22)		1,457 individuals caught in 2017–18 (of which, 428 were kept, Ryan et al 2019). Shore-based catches are unknown.

Commonwealth – Catch. Catch provided for the Commonwealth align with the 2021–22 financial year.

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.

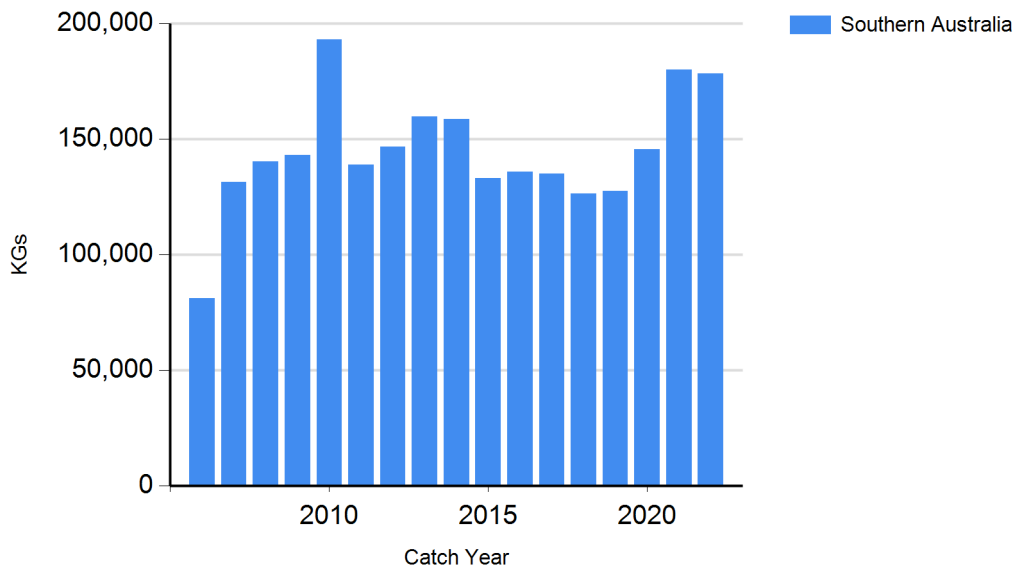
Commonwealth – Indigenous. The Australian Government does not manage non-commercial Indigenous fishing in Commonwealth waters, with the exception of the Torres Strait. In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those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

Western Australia – Recreational (Management Methods). A recreational fishing from boat licence is required for recreational fishing from a powered vessel in Western Australia.

Queensland – Indigenous (Management Methods). For more information see: <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

New South Wales – Indigenous (Management Methods). <https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>

CATCH CHART



Commercial catch of Bronze Whaler.

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