

Australian Sardine (2023)

Sardinops sagax



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth, New South Wales	Eastern Australia	Sustainable	Spawning biomass, exploitation rate, catch
Commonwealth, New South Wales, Victoria	South Eastern Australia	Sustainable	Spawning biomass, exploitation rate, catch
Western Australia	South Western Australia	Sustainable	Spawning biomass, exploitation rate, catch
South Australia	Southern Australia	Sustainable	Spawning biomass, exploitation rate, catch

STOCK STRUCTURE

Australian Sardine off southern Australia is a meta-population [Whittington et al. 2008], with effective isolation of four separate biological stocks: the South Western (off Western Australia); Southern (off South Australia); South Eastern (off Victoria, Tasmania and southern NSW) and Eastern (off northern New South Wales and southern Queensland) Australian stocks [Izzo et al. 2017]. Recent evidence has confirmed the separation of the South Eastern Australia stock from the Eastern Australia stock [Sexton et al. 2018]. There is some evidence that the South Western and Eastern biological stocks each include two separate sub-components [Gaughan et al. 2002, Izzo et al. 2017]. The two sub-components off Western Australia were previously reported as two separate biological stocks, but these have now been merged into a single South Western Australia stock, which is managed as two separate units.

Stock status for Australian Sardine is presented at the biological stock level—South Western Australia, Eastern Australia, South Eastern Australia and Southern Australia.

STOCK STATUS

Eastern Australia

The most recent assessment of the Eastern Australia stock of Australian Sardine was completed in 2022 using fishery data for 2021–22 [AFMA 2022, Stewart 2023] and a Daily Egg Production Method (DEPM) survey undertaken in 2019 [Ward et al. 2021]. The primary biological performance indicators are spawning biomass and exploitation rate.

A survey conducted in 2014 that extended from Sandy Cape to Bateman's Bay during the peak spawning season (August–September) estimated that the spawning biomass of the eastern stock was approximately 49,600 t (95% confidence interval 24,000–213,000 t) [Ward et al. 2015a]. A survey conducted in the same region in 2019 suggested that spawning biomass was 42,724 t (95% confidence interval 15,487–69,962 t) [Ward et al. 2021].

The total annual catch from the eastern stock was 524 t in 2022, down from 717 t in 2021 [Grammer et al. 2022; Patterson et al. 2022]. Recent catches from the eastern stock of Australian Sardine have been less than 2% of the 2019 estimate of spawning biomass, which is well below the 30% level considered safe for this species by Smith et al. [2015].

The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the Eastern Australia biological stock of Australian Sardine is classified as a **sustainable stock**.

South Eastern Australia

The South Eastern Australia stock of Australian Sardine was first assessed in 2018. Spawning biomass and exploitation rate are the primary biological performance indicators.

A recent study by Ward et al. [2023] integrated data from DEPM surveys undertaken primarily to assess Common Jack Mackerel in 2014 [Ward et al. 2015b], 2016–17 [Ward et al. 2018] and 2020 [Ward et al. 2022]. That study showed that the spawning biomass in the area surveyed was 262,564 t (95% confidence interval 125,670–326,438 t). Habitat modelling suggests that the total spawning biomass may be approximately 350,000 to 400,000 t [Ward et al. 2023].

Catches of Australian Sardine from southern New South Wales peaked at around 4,800 t in 2009 but have averaged approximately 120 t per annum since 2011–12 after a fire destroyed the processing factory in Eden. Australian Sardine landings from Victoria have largely been taken from eastern Bass Strait and Port Phillip Bay, and have fluctuated greatly. Landings peaked at around 5,000 t in 1983, but have mostly been below 1000 t since, with landings in 2021–22 being 563 t [VFA 2022]. Commercial net fishing in Port Phillip Bay ceased in 2022, so it is likely that future catches of Australian Sardine in Victoria will be solely from Bass Strait. Historical Tasmanian catches have been negligible with a maximum catch of 33 t taken in 2017–18.

Recent catches equate to an exploitation rate of less than 1% of the estimated spawning biomass in the surveyed area of Bass Strait of 262,564 t, which is

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below the level considered safe for this species (i.e., 30%) by Smith et al. [2015]. New evidence of the large stock of Australian Sardine in Bass Strait [Ward et al. 2023] could support establishment of a Tasmanian fishery [Ward and Gardner 2022].

The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

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

**South
Western
Australia**

The South Western Australia stock of Australian Sardine off Western Australia comprises two separate management units with some biological separation: the West Coast and South Coast. Risk-based, weight-of-evidence stock assessments [Blazeski et al. 2021] are summarised here for both management units.

Population modelling based on spawning biomass estimates obtained using the DEPM, catch-at-age and catch data, showed that by the mid-2000s both stocks had strongly recovered from the 1998–99 mass mortality caused by a herpes virus [Gaughan et al. 2008].

The annual exploitation rate of the West Coast management unit in the mid-2000s was low, at less than 5% (around 400 t) of the estimated spawning biomass of approximately 25,000 t. Since then, annual catches have remained below this level due to low fishing effort. .

The annual exploitation rate of the South Coast management unit in the mid-2000s was also low, at around 3% (less than 3,000 t of the estimated spawning biomass of approximately 97,000 t). Annual catch has not exceeded 3,000 t since then due to low levels of effort.

The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

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

**Southern
Australia**

The Southern Australia stock of Australian Sardine is fished by the South Australian Sardine Fishery [PIRSA 2023]. The stock was last assessed in 2022 using the DEPM [Grammer and Ivey 2022] and in 2021 using population modelling of estimates of spawning biomass, catch and catch-at-age data [Grammer et al. 2021].

Recent estimates of spawning biomass obtained using both the DEPM and population modelling have been above 300,000 t [Grammer et al. 2021; Grammer and Ivey 2022], which is above the target reference point of 200,000 t identified in the management plan for the SASF [PIRSA 2023]. The current exploitation rate is less than 20% (that is a Total Allowable catch of 50,000 t from an estimated spawning biomass of more than 300,000 t), which is below the 30% level considered safe for this stock by Smith et al. [2015].

The above evidence indicates that the biomass of this stock is unlikely to be

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depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

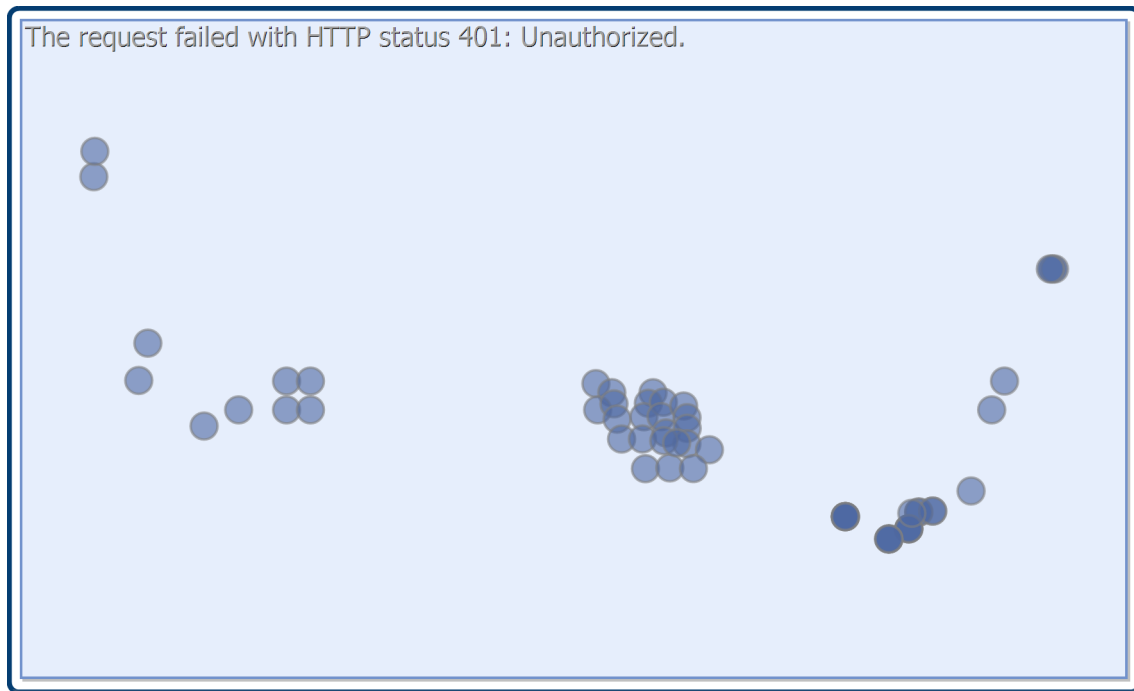
On the basis of the evidence provided above, the Southern Australia biological stock is classified as a **sustainable stock**.

BIOLOGY

Australian Sardine biology [Stewart et al. 2010; Ward and Grammer 2018]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Australian Sardine	9 years; 200–250 mm SL	1–2 years; 145 mm SL

DISTRIBUTION



Distribution of reported commercial catch of Australian Sardine

TABLES

Fishing methods	Commonwealth	New South Wales	South Australia	Victoria	Western Australia
Charter					
Unspecified					✓
Commercial					
Danish Seine	✓				

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Net				✓	
Otter Trawl	✓				✓
Purse Seine	✓	✓	✓		✓
Various		✓			
Recreational					
Handline		✓			

Management Methods					
	Commonwealth	New South Wales	South Australia	Victoria	Western Australia
Commercial					
Effort limits				✓	
Gear restrictions	✓	✓	✓	✓	✓
Licence				✓	
Limited entry	✓		✓	✓	✓
Spatial closures		✓		✓	✓
Total allowable catch	✓	✓	✓		✓
Recreational					
Bag limits		✓		✓	✓
Gear restrictions				✓	✓
Licence				✓	
Licence (Recreational Fishing from Boat License)					✓
Possession limit					✓
Spatial closures		✓		✓	✓

Catch					
	Commonwealth	New South Wales	South Australia	Victoria	Western Australia
Charter					Confidential
Commercial	103.908 t	412.807 t	46935 t	467.488 t	1715.04 t

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Indigenous		Unknown	Unknown	Unknown (No catch under permit)	Unknown
Recreational		Unknown	No catch	Unknown	Less than 1 tonne

Commonwealth – Commercial (Catch) Commonwealth data is presented for 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.

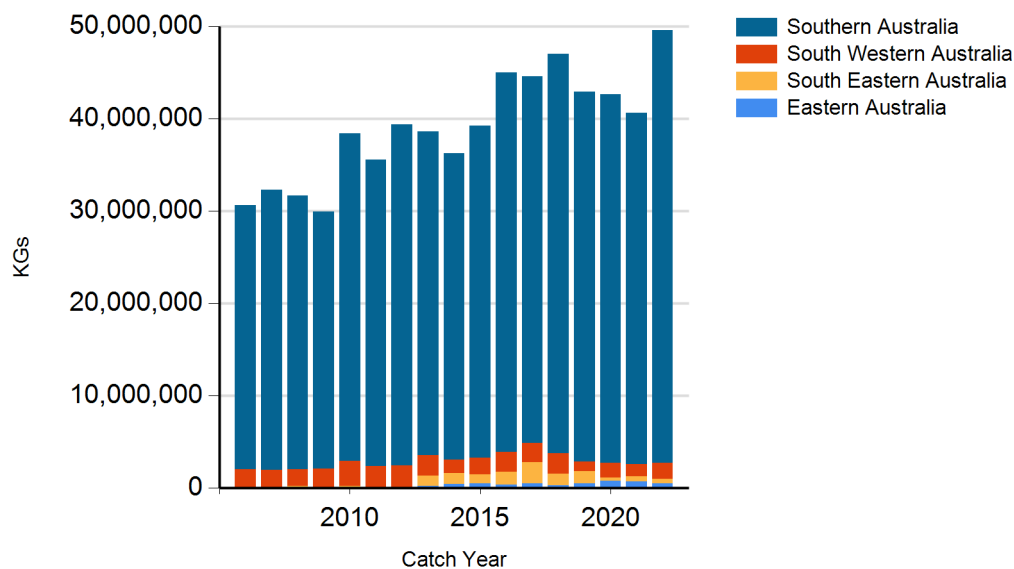
Western Australia – Recreational (Management Methods) a Recreational Fishing from Boat License is required for use of a powered boat to fish or to transport catch or fishing gear to or from a land-based fishing location.

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

Victoria – Indigenous (Management Methods) A person who identifies as Aboriginal or Torres Strait Islander is exempt from the need to obtain a Victorian recreational fishing licence, provided they comply with all other rules that apply to recreational fishers, including rules on equipment, catch limits, size limits and restricted areas. Traditional (non-commercial) fishing activities that are carried out by members of a traditional owner group entity under an agreement pursuant to Victoria’s *Traditional Owner Settlement Act 2010* are also exempt from the need to hold a recreational fishing licence, subject to any conditions outlined in the agreement. Native title holders are also exempt from the need to obtain a recreational fishing licence under the provisions of the Commonwealth’s *Native Title Act 1993*.

CATCH CHART

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Commercial catch of Australian Sardine - note confidential catch not shown

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