

# Blue Mackerel (2018)

*Scomber australasicus*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth, New South Wales, Victoria, Tasmania	Eastern	N/A, OHF, OPSF, SESSF (CTS), SF, SPF	Sustainable	Catch, effort, CPUE, spawning biomass, ecosystem modelling
Commonwealth, Western Australia, Tasmania, South Australia	Western	CSFNMF, CSFNMF    JASGDLMF    WCPSMF    WL (SC), JASGDLMF, MSF, SESSF (GABTS), SF, WCPSMF, WL (SC)	Sustainable	Catch, effort

SESSF (CTS) Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector) (CTH), SESSF (GABTS) Southern and Eastern Scalefish and Shark Fishery (Great Australian Bight Trawl Sector) (CTH), SPF Small Pelagic Fishery (CTH), N/A Not Applicable (NSW), OHF Ocean Hauling Fishery (NSW), MSF Marine Scalefish Fishery (SA), SF Scalefish Fishery (TAS), OPSF Ocean Purse Seine Fishery (VIC), CSFNMF Cockburn Sound (Fish Net) Managed Fishery (WA), JASGDLMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA), WCPSMF West Coast Purse-Seine Managed Fishery (Condition) (WA), WL (SC) Open Access in the South Coast (WA), CSFNMF || JASGDLMF || WCPSMF || WL (SC) Various Fisheries combined due to 3 boat rule (WA)

## STOCK STRUCTURE

Following a data synthesis undertaken to establish management zones in the Commonwealth Small Pelagic Fishery (SPF) [Bulman et al. 2008], Blue Mackerel off southern Australia is currently considered to be comprised of two biological stocks: the Western stock that extends from western Tasmania to southern Western Australia and the Eastern stock, which occurs to the east of Bass Strait [AFMA 2008, 2009]. Blue Mackerel and other target species in the SPF are managed in western and eastern sub-areas [AFMA 2008, 2009], which reflect this stock structure.

Assessment of the stock status of Blue Mackerel is presented at the biological stock level—

Western and Eastern

## STOCK STATUS

### Eastern

The most recent assessment of the Eastern stock of Blue Mackerel was completed in 2018 using fishery data for 2016 [Ward and Grammer 2018] and the results of an application of the daily egg production method in 2014 [Ward et al. 2015]. The primary biological performance indicators are spawning biomass and exploitation rate.

The spawning biomass of Blue Mackerel off eastern Australia in 2014 was estimated to be approximately 83 300 t (95 per cent confidence interval 35 100–165 000 t) [Ward et al 2015]. This estimate is higher than the preliminary estimate of 23 009 t obtained in 2004 [Ward et al. 2009]. Ward et al [2015] recommended that the estimate spawning biomass for 2014 be used with caution due to uncertainty in the estimates of adult parameters, especially spawning fraction.

Historically, total annual catches of Blue Mackerel from the eastern stock have typically been less than 1 000 t per annum [Ward and Grammer 2018]. The total annual catch peaked at approximately 3 800 t in 2016 when a factory trawler operated in the SPF. Small catches of Blue Mackerel from the Eastern stock are taken by recreational fishers off Victoria, Tasmania, New South Wales and Queensland.

Recent catches, including the 3 800 t taken in 2016 have been less than 5 per cent of the estimate of spawning biomass in 2014 of 83 300, and well below the sustainable exploitation rate of 23 per cent suggested for this stock [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 biological stock of Blue Mackerel is classified as a **sustainable stock**.

### Western

The most recent assessment of the Western stock of Blue Mackerel was completed in 2018 using fishery data for 2016 [Ward and Grammer 2018] and the results of an application of the daily egg production method in 2005 [Ward et al. 2009]. The primary biological performance indicators are spawning biomass and exploitation rate.

A preliminary application of the daily egg production method to Blue Mackerel off South Australia during 2005 provided an estimated spawning biomass of approximately 56 000 tonnes (t) [Ward et al. 2009]. This estimate of spawning biomass was considered to be conservative as the survey only covered a limited part of the area in which this stock occurs, and there was evidence of spawning activity outside the survey area in the western Great Australian Bight [Ward et al. 2009].

Total annual catches of Blue Mackerel from the Western stock were low in the late-1990s and early-2000s (less than 55 t) but increased to between 1 000 t and 2 000 t in 2008 and 2009. These larger catches were taken mainly by purse-seine vessels operating in the SPF off South Australia. Total annual catches of between 750 t and 1 000 t were taken in the SPF in 2015 and 2016, when a factory trawler operated in the fishery. Commercial fishing for Blue Mackerel by Western Australian licenced vessels was prohibited in 1999. Tasmanian catches of Blue Mackerel over the last decade have been low (< 5 t per annum). Small catches of Blue Mackerel from the western stock are taken by recreational

fishers off Western Australia, South Australia, Victoria and Tasmania.

Low annual catches of Blue Mackerel from the Western stock reflect low levels of fishing effort rather than low biomass levels [Ward and Grammer 2018]. Recent catches (< 1 000 t) are less than 2 per cent of the estimated spawning biomass in 2005 of ~ 56 000 t [Ward et al. 2009], and well below the sustainable exploitation rate of 23 per cent suggested for this stock [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 Western biological stock of Blue Mackerel is classified as a **sustainable stock**.

## BIOLOGY

**Blue Mackerel biology** [Stevens et al. 1984, Ward and Grammer 2016, Ward and Rogers 2007]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Blue Mackerel	8 years, 440 mm FL	2 years, 237–287 mm FL

## DISTRIBUTION



Distribution of reported commercial catch of Blue Mackerel

## TABLES

Commercial Catch Methods	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
Beach Seine						✓
Danish Seine	✓					
Gillnet				✓		✓
Hand Line, Hand Reel or Powered Reels						✓

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
Blue Mackerel (2018)

Hook and Line			✓			
Midwater Trawl	✓					
Otter Trawl	✓					
Purse Seine	✓	✓			✓	✓
Squid jigs (mechanised)	✓					
Trolling						✓
Unspecified		✓		✓		✓

Fishing methods						
	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
<b>Charter</b>						
Handline		✓				
<b>Commercial</b>						
Gillnet						✓
Hand Line, Hand Reel or Powered Reels						✓
Hook and Line			✓			
Midwater Trawl	✓					
Otter Trawl	✓					
Purse Seine		✓			✓	✓
Unspecified		✓		✓		✓
<b>Indigenous</b>						
Handline		✓				
Hook and Line						✓
<b>Recreational</b>						
Gillnet				✓		
Handline		✓		✓	✓	
Hook and Line			✓			✓
Various						✓

Management Methods						
	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
<b>Charter</b>						
Licence		✓				✓
Limited entry						✓
Spatial closures						✓
<b>Commercial</b>						
Catch limits	✓					✓

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
Blue Mackerel (2018)

<b>Effort limits</b>					✓	
<b>Gear restrictions</b>					✓	
<b>Licence</b>			✓		✓	
<b>Limited entry</b>	✓	✓	✓	✓	✓	✓
<b>Marine park closures</b>		✓				
<b>Mesh size regulations</b>	✓	✓		✓		
<b>Possession restrictions</b>						✓
<b>Size limit</b>					✓	
<b>Spatial closures</b>	✓	✓		✓	✓	✓
<b>Vessel restrictions</b>	✓	✓		✓		
<b>Indigenous</b>						
<b>Bag limits</b>		✓		✓		
<b>Customary fishing permits</b>					✓	✓
<b>Native Title</b>		✓				
<b>Section 37 (1d)(3)(9), Aboriginal cultural fishing authority</b>		✓				
<b>Recreational</b>						
<b>Bag limits</b>		✓	✓	✓	✓	✓
<b>Gear restrictions</b>					✓	
<b>Licence</b>					✓	
<b>Licence (Recreational Fishing from Boat License)</b>						✓
<b>Marine park closures</b>		✓				
<b>Possession limit</b>		✓				✓
<b>Size limit</b>					✓	
<b>Spatial closures</b>		✓			✓	✓
<b>Active Vessels</b>						
	<b>Commonwealth</b>	<b>New South Wales</b>	<b>South Australia</b>	<b>Tasmania</b>	<b>Victoria</b>	<b>Western Australia</b>
	8 Vessels in SESSF (CTS). 2	11 Fishing Business in	3 Licences in MSF.	8 Vessels in SF,	1 in OPSF,	&lt;3 in CSFNMF. &lt;3

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
Blue Mackerel (2018)

	Vessels in SESSF (GABTS), 1 Vessels in SPF,	OHF, 22 Fishing Business in OTF, 57 Fishing Business in OTLF,				in JASDGDMF, &3 in WCPSMF, &3 in WL (SC), 3 in Charter,
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**SESSF (CTS)** Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector)(CTH)

**SESSF (GABTS)** Southern and Eastern Scalefish and Shark Fishery (Great Australian Bight Trawl Sector)(CTH)

**SPF** Small Pelagic Fishery(CTH)

**OHF** Ocean Hauling Fishery(NSW)

**OTF** Ocean Trawl Fishery(NSW)

**OTLF** Ocean Trap and Line Fishery(NSW)

**MSF** Marine Scalefish Fishery(SA)

**SF** Scalefish Fishery(TAS)

**OPSF** Ocean Purse Seine Fishery(VIC)

**CSFNMF** Cockburn Sound (Fish Net) Managed Fishery(WA)

**JASDGDMF** Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2)(WA)

**WCPSMF** West Coast Purse-Seine Managed Fishery (Condition)(WA)

**WL (SC)** Open Access in the South Coast(WA)

**Charter** Tour Operator(WA)

Catch	Commonwealth	New South Wales	South Australia	Tasmania	Victoria	Western Australia
<b>Charter</b>						Unknown
<b>Commercial</b>	1.798t in SESSF (CTS), 0.011t in SESSF (GABTS), 301.004t in SPF,	10.454t in N/A, 294.524t in OHF,		2.848t in SF,		0.273858t in CSFNMF    JASDGDMF    WCPSMF    WL (SC),
<b>Indigenous</b>	Unknown	Unknown		Unknown	Unknown (No catch under permit)	Unknown
<b>Recreational</b>	Unknown	125 000 fish in 2013–14	103,764 fish in 2013-14 (Giri and Hall 2015)	5.2 t (2012–13)	Unknown	<0.1 t

SESSF (CTS) Southern and Eastern Scalefish and Shark Fishery (Commonwealth Trawl Sector) (CTH), SESSF (GABTS) Southern and Eastern Scalefish and Shark Fishery (Great Australian Bight Trawl Sector) (CTH), SPF Small Pelagic Fishery (CTH), N/A Not Applicable (NSW), OHF Ocean Hauling Fishery (NSW), MSF Marine Scalefish Fishery (SA), SF Scalefish Fishery (TAS), OPSF Ocean Purse Seine Fishery (VIC), CSFNMF Cockburn Sound (Fish Net) Managed Fishery (WA), JASDGDMF Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (Zone 1 & Zone 2) (WA), WCPSMF West Coast Purse-Seine Managed Fishery (Condition) (WA), WL (SC) Open Access in the South Coast (WA), CSFNMF || JASDGDMF || WCPSMF || WL (SC) Various Fisheries combined due to 3 boat rule (WA),

**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 data is presented for 2017.

**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.

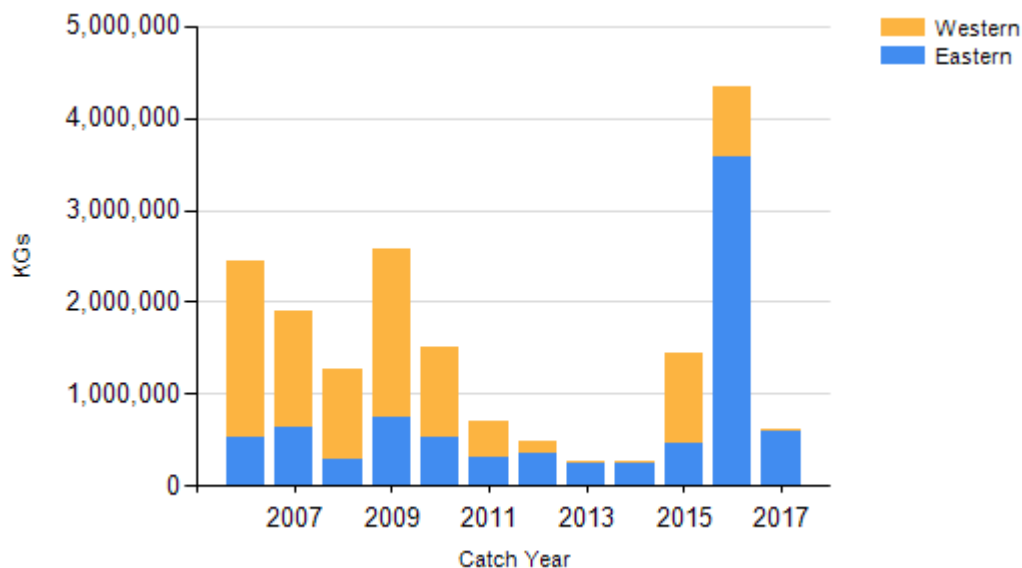
**Tasmania – Recreational** In Tasmania, a recreational licence is required for fishers using dropline or longline gear, along with nets, such as gillnet or beach seine.

**New South Wales – Indigenous (Management Methods)** (a) Aboriginal Cultural Fishing Interim Access Arrangement—allows an Indigenous fisher in New South Wales to take in excess of a recreational bag limit in certain circumstances; for example, if they are doing so to provide fish to other community members who cannot harvest for themselves; (b) The Aboriginal cultural fishing authority is the authority that Indigenous persons can apply to take catches outside the recreational limits under the *Fisheries Management Act 1994* (NSW), Section 37 (1d)(3)(9), Aboriginal cultural fishing authority; and (c) In cases where the *Native Title Act 1993* (Cth) applies fishing activity can be undertaken by the person holding native title in line with S.211 of that Act, which provides for fishing activities for the purpose of satisfying their personal, domestic or non-commercial communal needs. In managing the resource where native title has been formally recognised, the native title holders are engaged with to ensure their native title rights are respected and inform management of the State's fisheries resources.

**Tasmania – Indigenous (Management Methods)** In Tasmania, aborigines engaged in aboriginal fishing activities in marine waters are exempt from holding recreational fishing licences, but must comply with all other fisheries rules as if they were licensed. Additionally, recreational bag and possession limits also apply. If using pots, rings, set lines or gillnets, aborigines must obtain a unique identifying code (UIC). The policy document Recognition of Aboriginal Fishing Activities for issuing a UIC to a person for Aboriginal Fishing activity explains the steps to take in making an application for a UIC.

**Victoria – Indigenous (Management Methods)** In Victoria, regulations for managing recreational fishing may not apply to fishing activities by Indigenous people. Victorian traditional owners may have rights under the Commonwealth's *Native Title Act 1993* to hunt, fish, gather and conduct other cultural activities for their personal, domestic or non-commercial communal needs without the need to obtain a licence. Traditional Owners that have agreements under the *Traditional Owner Settlement Act 2010* (Vic) may also be authorised to fish without the requirement to hold a recreational fishing licence. Outside of these arrangements, Indigenous Victorians can apply for permits under the *Fisheries Act 1995* (Vic) that authorise fishing for specific Indigenous cultural ceremonies or events (for example, different catch and size limits or equipment). There were no Indigenous permits granted in 2017 and hence no Indigenous catch recorded.

## CATCH CHART





Commercial catch of Blue Mackerel - note confidential catch not shown

## EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

### ENVIRONMENTAL EFFECTS on Blue Mackerel

<b>References</b>	
147	Bulman, C, Condie, S, Findlay, J, Ward, B and Young, J 2008, Management zones from small pelagic fish species stock structure in southern Australian waters, Final report to the Fisheries Research and Development Corporation and Australian Fisheries Management Authority, FRDC Project No 2006/076, Commonwealth Scientific and Industrial Research Organisation, Hobart.
148	Australian Fisheries Management Authority 2008, Small Pelagic Fishery harvest strategy (last revised April 2015). AFMA, Canberra.
149	Australian Fisheries Management Authority 2009, Small Pelagic Fishery management plan 2009, Federal Register of Legislative Instruments F2010L00081, AFMA, Canberra.
150	Ward, TM and Grammer, GL 2018, Commonwealth Small Pelagic Fishery: Fishery Assessment Report 2017. Report to the Australian Fisheries Management Authority (PDF 5.7 MB). South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No. F2010/000270-9. SARDI Research Report Series No. 982. 114pp.
151	Ward, TM, Rogers, PJ, McLeay, LJ and McGarvey, R 2009, Evaluating the use of the daily egg production method for stock assessment of blue mackerel, <i>Scomber australasicus</i> , Marine and Freshwater Research, 62:112–128.
152	Smith, ADM, Ward, TM, Hurtado, F, Klaer, N, Fulton, E and Punt, AE 2015, Review and update of harvest strategy settings for the Commonwealth Small Pelagic Fishery: Single species and ecosystem considerations. Final Report of FRDC Project No. 2013/028. Commonwealth Scientific and Industrial Research Organisation Oceans and Atmosphere Flagship, Hobart.
153	Ward, TM, Grammer, GL, Ivey, AR, Carroll, JR, Keane, JP, Stewart, J and Litherland, L 2015, Egg distribution, reproductive parameters and spawning biomass of Blue Mackerel, Australian Sardine and Tailor off the East Coast during late winter and early spring, FRDC Project No. 2014/033, South Australian Research and Development Institute (Aquatic Sciences), Adelaide.
154	Stevens, JD, Hausfeld, HF and Davenport, SR 1984, Observations on the biology, distribution and abundance of <i>Trachurus declivis</i> , <i>Sardinops neopilchardus</i> and <i>Scomber australasicus</i> in the Great Australian Bight. Commonwealth Scientific and Industrial Research Organisation Marine Laboratories, Cronulla.
155	Ward, TM and Rogers, PJ 2007, Development and evaluation of egg-based stock assessment methods for blue mackerel <i>Scomber australasicus</i> in southern Australia. Final report to the Fisheries Research and Development Corporation Project No 2002/061. South Australian Research and Development Institute (Aquatic Sciences), Adelaide.
156	Giri, K and Hall, K 2015, South Australian Recreational Fishing Survey 2013/2014. Fisheries Victoria Internal Report Series No. 62