

Common Jack Mackerel (2016)

Trachurus declivis



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth, New South Wales, Tasmania	Eastern	OTF, SESSF (CTS), SF, SPF, VIT	Sustainable	Catch, effort and CPUE trends, spawning biomass, ecosystem modelling
Commonwealth, Tasmania	Western	SESSF (CTS), SESSF (GABTS), SF, SPF	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), VIT Victorian Inshore Trawl Fishery (CTH), OTF Ocean Trawl Fishery (NSW), SF Scalefish Fishery (TAS)

STOCK STRUCTURE

A study conducted to provide a basis for establishing management zones in the Commonwealth Small Pelagic Fishery (SPF) concluded that there is evidence for at least two biological stocks of Common Jack Mackerel in Australian waters: one off eastern Australia and the other extending from western Tasmania to southern Western Australia[1]. Evidence supporting these conclusions include morphological, meristic and genetic differences between fish from these two areas[2,3] and a lack of genetic difference between fish from eastern Tasmania and New South Wales[4]. There is some evidence that more than one stock may occur off eastern Australia, however further studies are required to address that issue[3,4]. In the SPF, Common Jack Mackerel and other target species managed as separate Eastern and Western biological stocks[5,6].

Here, assessment of stock status is presented at the biological stock level—Western and Eastern.

STOCK STATUS

Eastern The spawning biomass of Common Jack Mackerel East during 2014 was

estimated to be 157 805 t (95 per cent confidence interval = 59 570–358 731 t)[9] using the DEPM. This estimate is considered robust because it was based on reliable estimates of critical DEPM parameters such as egg production, spawning area and spawning fraction, and is within the range of preliminary estimates of spawning biomass off eastern Australia in 2002–04 of 114 900–169 000 t[10]. Total annual catches of Common Jack Mackerel off eastern Australia declined from 9873 t in 1997–98 to 381 t in 2000–01 and have not exceeded around 3000 t since 2003–04[7]. Catches were mainly taken by purse-seining from 1997–98 to 2000–01 and by mid-water trawling from 2001–02 onwards[7]. Minimal fishing was conducted between 2010–11 and 2013–14. The total catch in 2014–15 was only 317 t. Recent low catches of Common Jack Mackerel East reflect low fishing effort, rather than low abundance[7]. Recent catches have been less than one per cent of the estimated spawning biomass[9], and well below the sustainable exploitation rate of 12 per cent proposed as a target for this species. The above evidence indicates that the biomass of the stock is unlikely to be recruitment overfished and that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

Western Estimates of spawning biomass obtained using the daily egg production method (DEPM) are not available for the Western stock of Common Jack Mackerel[7]. Aerial surveys in the 1970s suggested a biomass off western Tasmania of more than 80 000 tonnes (t)[8]. Annual catches of Common Jack Mackerel West have not exceeded 400 t since 1997–98. The total catch in 2014–15 was less than 1 t[7]. Low catches of Common Jack Mackerel West reflect low fishing effort, rather than low abundance. The above evidence indicates that the stock is unlikely to be recruitment overfished and that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

BIOLOGY

Common Jack Mackerel biology[11–13]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Common Jack Mackerel	17 years; 470 mm <u>FL</u>	5–6 years; 315 mm <u>FL</u>

DISTRIBUTION



Distribution of reported commercial catch of Common Jack Mackerel

TABLES

Commercial Catch Methods	Commonwealth	New South Wales	Tasmania
Gillnet			✓
Midwater Trawl	✓		
Otter Trawl	✓	✓	
Purse Seine	✓	✓	
Unspecified	✓		✓
Various			✓

Fishing methods	Commonwealth	New South Wales	Tasmania
Commercial			
Midwater Trawl	✓		
Otter Trawl	✓	✓	
Purse Seine	✓	✓	
Unspecified	✓		✓
Various			✓
Indigenous			
Hand Line, Hand Reel or Powered Reels		✓	
Recreational			

Gillnet			✓
Hand Line, Hand Reel or Powered Reels		✓	✓
Management Methods			
	Commonwealth	New South Wales	Tasmania
Commercial			
Catch limits	✓		✓
Limited entry	✓	✓	✓
Mesh size regulations		✓	✓
Spatial closures		✓	✓
Vessel restrictions	✓	✓	✓
Indigenous			
Bag limits		✓	✓
Section 31 (1)(c1), Aboriginal cultural fishing authority		✓	
Spatial closures		✓	
Recreational			
Bag limits		✓	✓
Spatial closures		✓	✓
Active Vessels			
	Commonwealth	New South Wales	Tasmania
	16 Vessel in SESSF (CTS), 0 Vessel in SESSF (GABTS), 1 Vessel in SPF,	6 Vessel in OTF,	11 Vessel in SF,

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)

OTF Ocean Trawl Fishery(NSW)

SF Scalefish Fishery(TAS)

Catch			

	Commonwealth	New South Wales	Tasmania
Commercial	9.649t in SESSF (CTS),	0.3339t in OTF,	6.337t in SF,
Indigenous	Unknown	Unknown	Unknown
Recreational	Unknown	Negligible	5.2 t (2012–13)

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), VIT Victorian Inshore Trawl Fishery (CTH), OTF Ocean Trawl Fishery (NSW), SF Scalefish Fishery (TAS),

a 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.

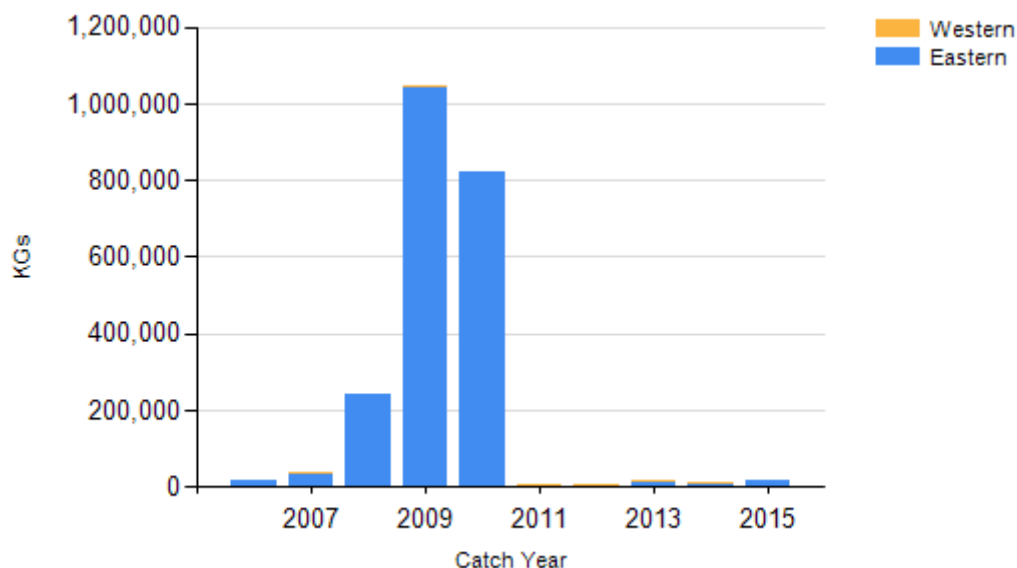
b Commonwealth – Indigenous The Australian Government does not manage non-commercial Indigenous fishing in Commonwealth waters, with the exception of the Torres Strait. In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those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

c Commonwealth – Commercial (management methods) Historically, no restrictions on vessel hold capacity have been in place in the Small Pelagic Fishery (Commonwealth). However, in 2012, an interim declaration was made to prevent factory trawlers greater than 130 m in length with on-board fish processing facilities, and storage capacity for fish or fish products in excess of 2000 t, from entering this fishery for a 2 year period.

d New South Wales – Indigenous (management methods) The Aboriginal Fishing Interim Compliance Policy 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 themselves.

e New South Wales – Indigenous (management methods) The Aboriginal cultural fishing authority is the authority that Indigenous persons can apply to take catches outside therecreational limits under the Fisheries Management Act 1994 (NSW), Section 37 (1)(c1), Aboriginal cultural fishing authority.

CATCH CHART



Commercial catch of Common Jack Mackerel - note confidential catch not shown.

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Purse-seine and mid-water trawl fisheries interact with marine mammals, including seals and dolphins. In Australian waters, some purse-seine fisheries commonly interact with the dolphins[15]. A Code of Practice has been successful in mitigating but not eliminating interactions with dolphins in the South Australia purse-seine fishery for Australian Sardine (*Sardinops sagax*)[15]. Mortalities of both seals and dolphins have been recorded during mid-water trawls in the Small Pelagic Fishery (Commonwealth) (SPF)[16]. Dolphins rarely interact with mid-water trawls, however, seals commonly enter and forage in these nets, with some mortalities[16]. Seal excluder devices in the trawl nets have reduced, but not eliminated, seal mortalities[16].
- Common Jack Mackerel are prey for a range of predatory fishes, marine mammals and seabirds. However, in Australia most predators forage on a wide range of prey are not dependent heavily dependent on one or two species[17–19]. Recent research also indicates that fishing for Common Jack Mackerel and other small pelagic species has only minor impacts on other parts of the ecosystem, as alternative food sources exist for large predator species[17,18]. Catch limits in the SPF at set at conservative levels which consider the ecological roles of Common Jack Mackerel[5,6,17].

ENVIRONMENTAL EFFECTS on Common Jack Mackerel

- A decrease in the presence and size of surface schools of Common Jack Mackerel in Tasmanian waters during the 1990s was initially considered to be due to the effects of heavy fishing pressure during the 1980s–90s by the Tasmanian Common Jack Mackerel (purse-seine) Fishery. However, there is evidence that strengthening of the East Australian Current has altered the swarming behaviour and abundance of Australian Krill (*Nyctiphanes australis*), a major prey for Common Jack Mackerel, and this contributed to the reduction in surface schools[19,20]. Associated with this ocean warming has been an apparent increase in the abundance of Redbait (*Emmelichthys nitidus*), a species that predominantly preys on small copepods[21], which may have increased in abundance with the strengthening of the East Australian Current[22].

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