Sea Mullet (2016)

Mugil cephalus

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Western Australia	EGBSMNMF,CSFNMF, SWTMF, WCBBFNMF, WL (WC), SBBSMNMF, SCEMF, SWCBNF, WCEMF	Sustainable	Catch, CPUE
Queensland, New South Wales	Eastern Australia	ECIFFF, EGF, OHF	Sustainable	Catch, CPUE, length and age frequencies

EGF Estuary General Fishery (NSW), OHF Ocean Hauling (NSW), ECIFFF East Coast Inshore Fin Fish Fishery (QLD), EGBSMNMF,CSFNMF, SWTMF, WCBBFNMF, WL (WC) Exmouth Gulf Beach Seine and Mesh Net Managed Fishery, Cockburn Sound (Line and Pot) Managed Fishery, South West Trawl Managed Fishery, West Coast (Beach Bait Fish Net) Managed Fishery, Open access in the West Coast (WA), SBBSMNMF Shark Bay Beach Seine and Mesh Net Managed Fishery (WA), SCEMF South Coast Estuarine Managed Fishery (WA), SWCBNF South West Coast Beach Net Fishery (Order) (WA), WCEMF West Coast Estuarine Managed Fishery (WA)

STOCK STRUCTURE

Extensive tagging studies[1] suggest a single east coast biological stock of Sea Mullet, extending from central Queensland to eastern Victoria. The biological stock structure of Sea Mullet off Western Australia is likely to be complex, although limited tagging and genetic studies[2,3] suggest mixing of fish throughout the lower west coast region, where the majority of the catch is taken. Therefore, a single Western Australian biological stock is assumed.

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

STOCK STATUS

Eastern Australia

This cross-jurisdictional biological stock has components in Queensland and New South Wales. Each jurisdiction assesses the part of the biological stock that occurs in its waters. The status presented here for the entire biological stock has been established using evidence from both jurisdictions.

The Queensland component of the Eastern Australian biological stock has a long history of stable commercial landings. In 2015, 1982 t was reported landed, which is close to the long-term average of around 2000 t. Length frequency information from routine monitoring shows stable distributions of fish sizes harvested by the Queensland fishery[5]. Age frequency information shows fish from three to five years old dominate catches, but older fish are present. Recruitment has been consistent, with evidence of recent strong year classes. The above evidence indicates that the biomass of the Queensland component of this stock is unlikely to be recruitment overfished.

Nominal effort in the Queensland component of the fishery has reduced from 8850 days in 2013 to 7505 in 2015, and the number of fishers reporting mullet (unspecified) catch has reduced from 287 fishers to 248 fishers over the same period. This decline is attributed to recent Queensland government funded buybacks of net fishing licences. Length frequency information shows stable patterns, and catch is well above minimum legal size. Age frequency information shows continued recruitment to the fishery and evidence of strong year classes. Estimates of fishing mortality are high compared with estimates of natural mortality, but they show a stable trend in combination with consistent catches. The above evidence indicates that the current level of fishing pressure is unlikely to cause the Queensland component of the stock to become recruitment overfished.

The New South Wales component of the Eastern Australian biological stock is assessed annually in terms of landings and catch rates (CPUE) in both the estuary and ocean fisheries[6]. The annual spawning run fishery on ocean beaches is also assessed in terms of fish sizes and ages in landings. Commercial median catch rates have remained stable in the estuary fishery (kg per day of mesh netting) and increased slightly in the ocean fishery (kg per day of beach hauling) since the early 1980s. The size compositions of fish in ocean landings have remained stable, while the age compositions of fish in this fishery are generally between two and five years old, with some variations in year class strength. The above evidence indicates that the biomass of the New South Wales component of the stock is unlikely to be recruitment overfished.

Landings in New South Wales in 2015 (2328 t) were below the long-term annual average (around 3000 t). The reported number of fisher days in the ocean fishery in 2015 was at a historical low of approximately 350, down from around 900 days in 2010. Typical length and age frequency compositions were found in landings in 2015, with most fish being between three and seven years of age, suggesting no large changes in the stock. The above evidence indicates that the current level of fishing pressure is unlikely to cause the New South Wales component of the stock to become recruitment overfished.

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

Western Australia

The assessment for Sea Mullet is based on trends in catches and catch rates in the three main fisheries (Shark Bay Beach Seine and Mesh Net Managed Fishery, South Coast Estuarine Managed Fishery, West Coast Estuarine Managed Fishery [Table 1]) that have captured 80 per cent of the total commercial catch in the past decade (2006–15). Catch rates in these fisheries have been relatively stable since 1980. The catch rate trends suggest long-term stability in Sea Mullet abundance in each bioregion, with a slight increase in recent years. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished.

Sea Mullet occurs in all coastal regions of Western Australia, but commercial targeting of the species is mainly restricted to waters from Shark Bay

southwards[4]. In 2015, the total annual commercial catch of Sea Mullet in Western Australia was 200 tonnes (t). The total catch has declined by about 50 per cent since the 1990s as a consequence of commercial effort reductions in coastal and estuarine areas, attributable to licence buy-backs and spatial closures. The above evidence indicates 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 Australian biological stock is classified as a **sustainable stock**.

BIOLOGY

Sea Mullet biology[5,7,8,9]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Sea Mullet	Eastern Australia: 16 years; 640 mm FL Western Australia: 12 years; 790 mm FL	Eastern Australia: Males 300 mm TL; Females 330 mm TL Western Australia: Males and Females 370 mm TL

DISTRIBUTION

Distribution of reported commercial catch of Sea Mullet

TABLES

Commercial Catch Methods	New South Wales	Queensland	Western Australia
Haul Seine	✓		
Mesh Net	✓		
Net		✓	
Various			✓

Fishing methods			
	New South Wales	Queensland	Western Australia
Commercial			
Haul Seine	✓		
Mesh Net	✓		
Net		✓	
Various			✓
Indigenous			
Hand Line, Hand Reel or Powered Reels	✓		
Traps and Pots	✓		
Recreational			
Beach Seine		✓	
Cast Net		✓	
Coastal, Estuary and River Set Nets			✓
Hand Line, Hand Reel or Powered Reels	✓		✓
Traps and Pots	✓		

Management Methods			
	New South Wales	Queensland	Western Australia
Commercial			
Gear restrictions	✓	✓	✓
Limited entry	✓	✓	✓
Size limit	✓	✓	
Spatial closures	✓	✓	✓
Temporal closures	✓	✓	
Vessel restrictions	✓		✓
Indigenous			
Bag limits	✓		✓
Gear restrictions	✓	✓	✓
Section 31	✓		

(1)(c1), Aboriginal cultural fishing authority			
Size limit	✓		
Spatial closures	✓		
Recreational			
Bag limits	✓		✓
Gear restrictions	✓		✓
Licence			✓
Possession limit	✓	✓	
Size limit	✓	✓	
Spatial closures	✓		

Active Vessels			
	New South Wales	Queensland	Western Australia
	270 License in EGF, 37 License in OHF,	249 License in ECIFFF,	7 License in SBBSMNMF, 27 License in SCEMF, 9 License in SWCBNF, 11 License in WCEMF, 69 License in WL (SC), 15 License in WL (WC),

EGF Estuary General Fishery(NSW)

OHF Ocean Hauling(NSW)

ECIFFF East Coast Inshore Fin Fish Fishery(QLD)

SBBSMNMF Shark Bay Beach Seine and Mesh Net Managed Fishery(WA)

SCEMF South Coast Estuarine Managed Fishery(WA)

SWCBNF South West Coast Beach Net Fishery (Order)(WA)

WCEMF West Coast Estuarine Managed Fishery(WA)

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

WL (WC) Open Access in the West Coast(WA)

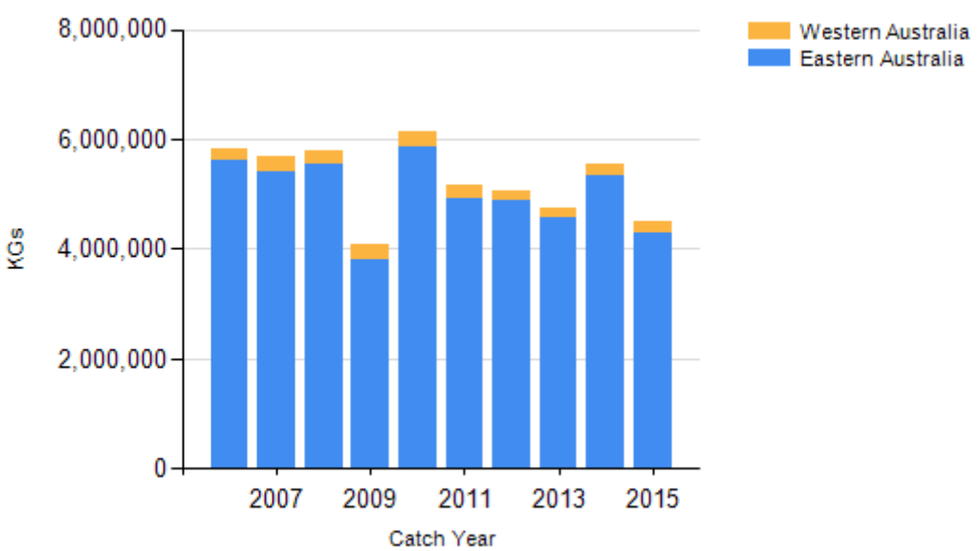
Catch			
	New South Wales	Queensland	Western Australia
Commercial	1018.84t in EGF, 1309.11t in OHF	1985.14t in ECIFFF,	37.968t in EGBSMNMF,CSFNMF, SWTMF

			WCBBFNMF, WL (WC), 37.396t in SBBSMNMF, 17.563t in SCEMF, 15.037t in SWCBNF, 92.104t in WCEMF,
Indigenous	Unknown	Unknown	Unknown
Recreational	Negligible	Negligible	Unknown

EGF Estuary General Fishery (NSW), OHF Ocean Hauling (NSW), ECIFFF East Coast Inshore Fin Fish Fishery (QLD), EGBSMNMF,CSFNMF, SWTMF, WCBBFNMF, WL (WC) Exmouth Gulf Beach Seine and Mesh Net Managed Fishery, Cockburn Sound (Line and Pot) Managed Fishery, South West Trawl Managed Fishery, West Coast (Beach Bait Fish Net) Managed Fishery, Open access in the West Coast (WA), SBBSMNMF Shark Bay Beach Seine and Mesh Net Managed Fishery (WA), SCEMF South Coast Estuarine Managed Fishery (WA), SWCBNF South West Coast Beach Net Fishery (Order) (WA), WCEMF West Coast Estuarine Managed Fishery (WA),

a Queensland – Indigenous (management methods) In Queensland, under the Fisheries Act 1994, Indigenous fishers are able to use prescribed traditional and non-commercial fishing apparatus in waters open to fishing. Size and possession limits and seasonal closures do not apply to Indigenous fishers. Further exemptions to fishery regulations can be obtained through permits.
b New South Wales – Indigenous (management methods) 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.
c New South Wales – Indigenous (management methods) Aboriginal Cultural Fishing authority—the authority to which Indigenous persons can apply to take catches outside the recreational limits under the NSW Fisheries Management Act 1994 (NSW), Section 37 (1)(c1), Aboriginal cultural fishing authority.

CATCH CHART



Commercial catch of Sea Mullet - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- The main fisheries for Sea Mullet use beach seining. This fishing method is highly targeted and as a result there is very little bycatch in these fisheries[10]. In

Queensland, the component of by-product caught in estuarine gillnets in the Sea Mullet fishery is less than 20 per cent by number, and much of this is retained and marketed[11].

ENVIRONMENTAL EFFECTS on Sea Mullet

- Sea Mullet penetrate far up rivers, often into fresh water, and barriers to fish passage (such as weirs and dams) can reduce the amount of habitat available to the species. Being highly dependent on riverine and estuarine habitats[12], Sea Mullet populations are vulnerable to fluctuations in water quality. Eutrophication and hypoxia can cause significant fish kills.

References

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