

# Grey Mackerel (2020)

*Scomberomorus semifasciatus*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Western Australia	Sustainable	Catch, indicator species
Northern Territory	North West Northern Territory	Sustainable	Biomass, fishing mortality, catch, catch rate
Northern Territory, Queensland	Gulf of Carpentaria	Sustainable	Biomass, fishing mortality, catch, catch rate
Queensland	North East Queensland	Sustainable	Quantitative stock assessment, biomass, fishing mortality, catch, effort
Queensland	South East Queensland	Sustainable	Quantitative stock assessment, biomass, fishing mortality, catch, effort

## STOCK STRUCTURE

Grey Mackerel (*Scomberomorus semifasciatus*) are found in southern Papua New Guinea and northern Australia from Shark Bay, Western Australia, to northern New South Wales. There are at least five Grey Mackerel biological stocks across northern Australia, with a possible additional stock in the north-east Gulf of Carpentaria [Welch et al. 2009, Charters et al. 2010, Newman et al. 2010, Broderick et al. 2011, Welch et al. 2015].

Here, assessment of stock status is presented at the biological stock level—Western Australia, North West Northern Territory, Gulf of Carpentaria, North East Queensland and South East Queensland.

## STOCK STATUS

Grey Mackerel in the Gulf of Carpentaria is primarily a commercial gillnet-caught

**Gulf of Carpentaria** species. Queensland and the Northern Territory share management of the Gulf of Carpentaria biological stock through the Queensland Fisheries Joint Authority. Queensland took the majority (91 per cent; 741 tonnes (t)) of the commercial harvest in 2019. Queensland introduced changes to the net fishery at the commencement of the 2012 season to reduce pressure on Grey Mackerel. These measures decreased the total length of available net by two-thirds, from 27 km to 9 km in the offshore component of the fishery. Changes made for the Queensland inshore fishery (within seven nautical miles of the coast) also reduced the capacity for boats to target Grey Mackerel. Commercial effort in 2019 (1 013 days fished) in Queensland was below the 10-year average (1 102 days fished from 2009 to 2018) [QFISH 2020]. Grey Mackerel in the Northern Territory are primarily taken in the NT Offshore Net and Line Fishery (ONLF). In 2018 the ONLF transitioned to an individual transferable quota management system, which restricts harvests of Grey Mackerel within a species-specific total allowable catch limit.

Stock reduction analysis of Grey Mackerel in the Gulf of Carpentaria, using Queensland and Northern Territory catches, estimated that the biomass in 2019 was 55 per cent of the unfished biomass and that the harvest rate was at 57 per cent of that required to achieve MSY [Northern Territory Government, unpublished]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. The level of fishing mortality is also unlikely to cause the stock to become recruitment impaired.

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

**North East Queensland** The North East Queensland biological stock is managed as part of a Queensland east coast-wide fishery. Grey Mackerel is primarily a commercial gillnet-caught species [Bessell-Browne et al. 2019] with an annual average of two per cent of catches taken by line fishing since 2005. The most recent stock assessment (using 2018 data) did not detect any trend in Grey Mackerel abundance that might indicate overfishing at the east coast-wide level or evidence to advocate against the current fishery-wide TACC of 250 t although it did suggest a slightly lower equilibrium MSY for the east coast at 227 t [Bessell-Browne et al. 2019]. The assessment suggests that the north east stock is currently at 48 per cent (range 37–58 per cent) of unfished biomass. Current harvest levels (39 t) [QFISH 2020] are below the equilibrium MSY level and the longer-term target of 60 per cent of unfished biomass for each stock. The above evidence indicates that the biomass of this stock is unlikely to be recruitment depleted and that recruitment is unlikely to be impaired.

Fishing pressure on the north east stock has been low in recent years, following the introduction of the current fishery-wide financial year TACC of 250 t. Prior to the introduction of the TACC, nominal fishing effort (days when Grey Mackerel were caught) in the north east averaged 1 020 annual net fishing days between 2004–05 and 2008–09, after which it decreased to an average of 516 annual net fishing days between 2009–10 and 2018–19. This level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

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

**North West Northern Territory** Grey Mackerel in the North West Northern Territory stock are primarily taken in the NT Offshore Net and Line Fishery (ONLF) using pelagic gillnets. Grey Mackerel harvest in the ONLF is restricted within a species-specific total allowable catch limit, which is managed through an individual transferable quota system.

Previous assessments of this biological stock included historic catch attributed to

the Taiwanese gillnet fleet that operated in Northern Australia from 1974 to 1986. This historic catch was excluded from the most recent assessment, as it is unlikely the Taiwanese fleet encountered this species due to the offshore nature of the fleet's operations and the coastal nature of Grey Mackerel populations.

The most recent assessment estimates that the biomass in 2019 was 71 per cent of the unfished level and that the harvest rate was 30 per cent of that required to achieve MSY [North Territory Government, unpublished]. The stock is not considered to be recruitment overfished and 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 North West Northern Territory biological stock is classified as a **sustainable stock**.

**South East Queensland** The South East Queensland biological stock is managed as part of a Queensland east coast-wide fishery. Grey Mackerel is primarily a commercial gillnet-caught species [Bessell-Browne et al. 2019] with an annual average of two per cent of catches taken by line fishing since 2005. The most recent stock assessment (using 2018 data) did not detect any trend in east coast Grey Mackerel abundance that might indicate overfishing at the east coast-wide level or evidence to advocate against the current fishery-wide TACC of 250 t although it did recommend the equilibrium MSY for the east coast to be slightly lower at 227 t [Bessell-Browne et al. 2019]. The assessment suggests that the south east stock is currently at 51 per cent (range 40–61 per cent) of unfished biomass. Current harvest levels (59 t) [QFISH 2020] are below the equilibrium MSY level and the longer term target of 60 per cent of unfished biomass for each stock. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Fishing pressure on the South East Queensland stock has remained low following the introduction of the current fishery-wide financial year TACC of 250 t. Prior to the introduction of the TACC, nominal fishing effort (days when Grey Mackerel were caught) in the south east averaged 1 427 annual net fishing days between 2004–05 and 2008–09, after which it decreased to an average of 792 annual net fishing days between 2009–10 and 2018–19. This level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

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

**Western Australia** Grey Mackerel is exploited as a component of the Mackerel Managed Fishery (Western Australia) (MMF) [Charters et al. 2010]. The primary target species of the Mackerel Managed Fishery is Spanish Mackerel (*Scomberomorus commerson*). As such there has been no formal stock assessment of Grey Mackerel in Western Australia and the species is assessed on the basis of catch only and the status of the indicator species (Spanish Mackerel) that represents the pelagic suite of species. A stock assessment of Spanish Mackerel, examining catch and effort data, biological information, biomass and yield per recruit modelling indicated that this stock is sustainable [Gaughan and Santoro 2018]. Since significant management changes in 2006, the catch and effort in the MMF have remained stable. In addition, Grey Mackerel are fast growing and attain sexual maturity relatively early in life (less than two years old) [Cameron and Begg 2002, Welch et al. 2009, GBRMPA 2011]. The minimum legal size limit for Grey Mackerel in Western Australia exceeds length at first maturity, which helps with sustainability by potentially providing some resilience to fishing pressure pending information regarding post-release survival.

Furthermore, annual Grey Mackerel catch levels by the MMF from 2000–19 have been low, ranging between 3.5 and 24 tonnes (t), with the vast majority of recent catches taken by only two vessels from a small area of their range

[Gaughan and Santoro 2018]. This level of catch is well below the total allowable commercial catch (TACC ; 60 t for each of the three management areas) for Grey Mackerel and very low in comparison with other states. The low levels of catch are likely reflective of the low demand and limited targeting of the species in the fishery. In addition, there is low annual charter boat catch of < 1 t and recreational catch of the species is estimated at less than 3 t by the four boat-based surveys between 2011 and 2018 [Ryan et al. 2019] which is also likely due to low targeting. Thus, based on the catch history it is likely that the level of stock depletion is minimal and the level of risk is estimated to be low. 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 current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

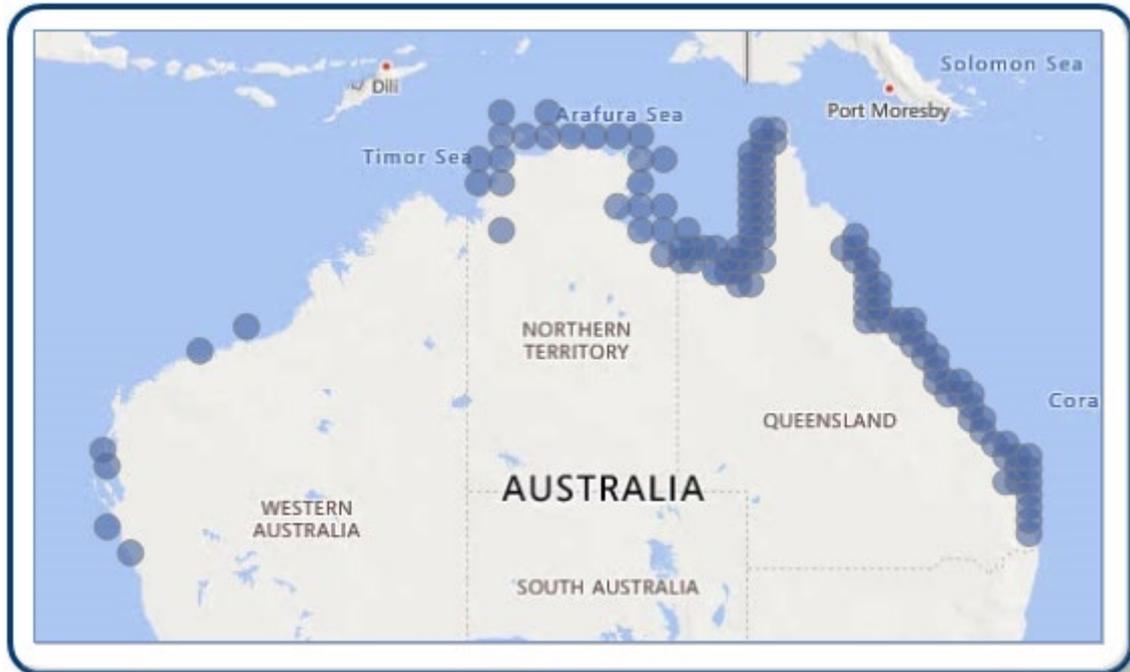
On the basis of the evidence provided above, the Western Australia biological stock is classified as a **sustainable stock**.

## BIOLOGY

**Grey Mackerel biology** [Cameron and Begg 2002, Department of Agriculture and Fisheries 2016]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Grey Mackerel	14 years, 1 200 mm FL	Females 2 years, 650–700 mm FL Males 1–2 years, 550–600 mm FL

## DISTRIBUTION



Distribution of reported commercial catch of Grey Mackerel

## TABLES

Fishing methods	Northern Territory	Queensland	Western Australia

<b>Charter</b>			
Hook and Line	✓		
Rod and reel			✓
<b>Commercial</b>			
Gillnet	✓		✓
Hand Line, Hand Reel or Powered Reels			✓
Line		✓	✓
Longline (Unspecifie d)	✓		
Net		✓	
Trolling	✓		✓
<b>Recreational</b>			
Hook and Line	✓	✓	✓
Spearfishing		✓	✓

<b>Management Methods</b>			
	<b>Northern Territory</b>	<b>Queensland</b>	<b>Western Australia</b>
<b>Charter</b>			
Bag limits			✓
Gear restrictions	✓	✓	
Limited entry			✓
Marine park closures		✓	
Passenger restrictions			✓
Possession limit	✓	✓	✓
Size limit		✓	✓
Spatial closures	✓		
Spatial zoning		✓	✓
<b>Commercial</b>			
Fishery spatial closures	✓	✓	
Gear restrictions	✓	✓	✓
Limited entry		✓	✓
Marine park closures		✓	
Quota	✓		

Size limit		✓	✓
Spatial zoning	✓	✓	✓
Total allowable catch	✓	✓	✓
Vessel restrictions	✓	✓	✓
<b>Recreational</b>			
Bag limits			✓
Gear restrictions	✓	✓	
Licence			✓
Marine park closures		✓	
Possession limit	✓	✓	✓
Size limit		✓	✓
Spatial closures	✓		
Spatial zoning		✓	

Catch			
	Northern Territory	Queensland	Western Australia
<b>Charter</b>	0.572t in FTO,	Unknown	< 0.5 t
<b>Commercial</b>	359.122 t	838.153 t	12.1252 t
<b>Indigenous</b>	Unknown	Unknown	Unknown
<b>Recreational</b>	Approximately 10 t (2009–2010)	Unknown	Insufficient data

**Western Australian – Recreational (catch)** Western Australian boat-based recreational catch survey from 1 Sep 2017–30 Aug 2018 [Ryan et al 2019]. Shore based recreational catch (if any) largely unknown.

**Western Australia – Recreational (Management methods)** Western Australian boat-based recreational licence required.

**Northern Territory – Charter (management methods)** In the Northern Territory, charter operators are regulated through the same management methods as the recreational sector but are subject to additional limits on license and passenger numbers.

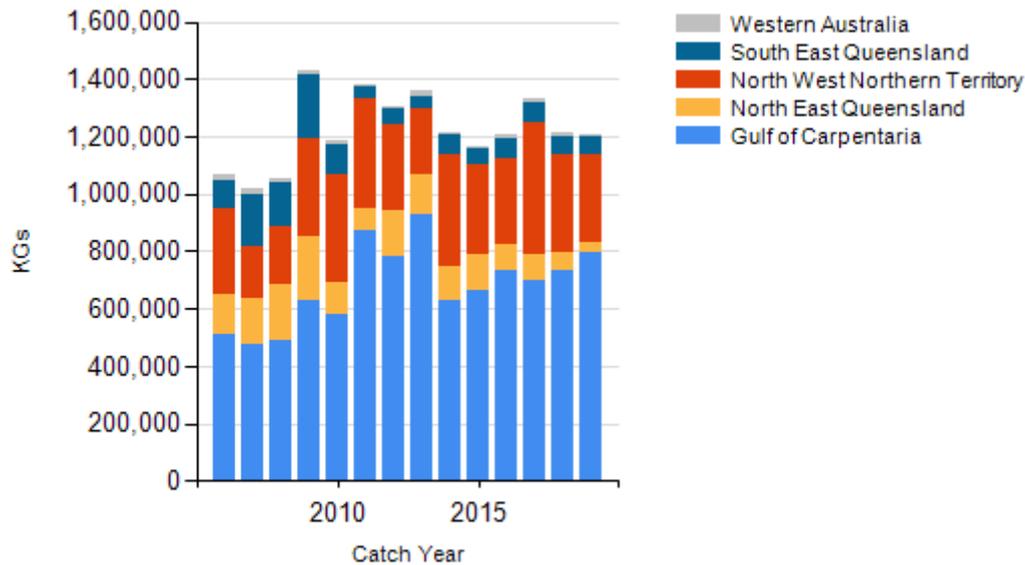
**Northern Territory – Indigenous (management methods)** The *Fisheries Act 1988* (NT), specifies that “...without derogating from any other law in force in the Territory, nothing in a provision of this Act or an instrument of a judicial or administrative character made under it limits the right of Aboriginals who have traditionally used the resources of an area of land or water in a traditional manner from continuing to use those resources in that area in that manner”.

**Queensland – Indigenous (management methods)** for more information see

<https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

**Indigenous** The reporting period for the Commonwealth (Torres Strait) is the 2012–13 financial year.

### CATCH CHART



Commercial catch of Grey Mackerel - note confidential catch not shown

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Bessell-Browne et al. 2019	Bessell-Browne P, Lovett R, Leigh G, O'Neill MF and Campbell A, 2019, Stock assessment of the Australian east coast grey mackerel ( <i>Scomberomorus semifasciatus</i> ) fishery. Technical Report. State of Queensland.
QFISH 2020	QFish, Department of Agriculture and Fisheries, <a href="http://www.qfish.gov.au">www.qfish.gov.au</a>
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