Spotted Mackerel (2023)

Scomberomorus munroi

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia, Northern Territory, Queensland	Northern Australia	Negligible	Catch, effort, current and historical fishing pressure
Queensland, New South Wales	Eastern Australia	Sustainable	Biomass, Catch, CPUE, Fishery-dependent length and age frequency, Estimates of total mortality rates, Stock assessment

STOCK STRUCTURE

Spotted Mackerel occurs in continental shelf waters along Australia's western, northern and eastern coast between the Abrolhos Islands region to central New South Wales [Begg et al. 1998a; Cameron and Begg 2002]. Genetic analysis, otolith microchemistry and tagging studies suggest that Spotted Mackerel comprise a single stock in eastern Australian waters [Begg et al. 1998a, b; Cameron and Begg 2002]. In northern and western Australian waters, the delineation of stocks is less clear. Results from an otolith microchemistry study suggest that fish from Gove and Joseph Bonaparte Gulf may belong to separate stocks [Cameron and Begg 2002] although the biological stock boundaries are unknown. Here, assessment of stock status is presented at the biological stock level—Eastern Australia; and the management unit—Northern Australia.

STOCK STATUS

Eastern Australia

Spotted Mackerel is commonly fished throughout its distribution along the east coast of Australia. Most of the fishery occurs in Queensland, with a smaller seasonal fishery occurring in northern New South Wales during late

summer–autumn [Bessell-Browne et al. 2018; Stewart et al. 2015]. Historically, commercial harvest peaked at 412 tonnes (t) in the early 2000s. In 2005, a stock assessment indicated that catches in 2002 were near, or above, the estimated maximum sustainable yield (MSY), raising concerns of overfishing [Begg et al. 2005]. To address this issue, management measures were introduced in Queensland that significantly reduced that risk [Bessell-Browne et al. 2018]. These measures included a limit on the commercial harvest, the prohibition of ring net fishing, by-product possession limits for net fishers and a reduced recreational possession limit. As a result, the annual commercial harvest in Queensland has averaged less than 8 t (net) and 59 t (line) over the past 19 years. A stock assessment in 2018 indicated that the total Queensland harvest now sits below MSY, with unfished biomass ranging between 40–60% [Bessell-Browne et al. 2018]. In 2021–22, the Queensland commercial net and line harvest was 34.7 t, which is below the 10-year average of 60.8 t and well below the annual commercial catch limit of 140 t. The number of active licences and days fished in 2021–22 was also below the 10-year average. The Queensland recreational harvest of Spotted Mackerel decreased between 2000 and 2019 (120,000 fish to 31,440 fish respectively) [Teixeira et al. 2021]. This change is largely attributed to the reduction in recreational line fishing effort between 2000 and 2011 [Taylor et al. 2012]. The New South Wales recreational harvest of Spotted Mackerel decreased, from around 13,000 fish during 2013–14 to less than 2,000 fish during 2017–18 and around 4,600 fish during 2019–20 [West et al. 2015; Murphy et al. 2020; Murphy et al. 2022]. Recreational harvest estimates of Spotted Mackerel in NSW are however difficult to obtain and are not reliable due to small sample sizes and large standard errors [Murphy et al. 2022].

The 2018 stock assessment indicated standardised catch rates for the Queensland commercial line fishery in 2016–17 were the lowest in a 30-year time series [Bessell-Browne et al. 2018]. Standardised catch rates are not available for the current period, however, the nominal catch rate for the line fishery for the 2021–22 period is 73 kg/day. This is above the low of 38 kg/day in 2016–17 and close to the 10-year average of 71 kg/day. Nominal catch rates in New South Wales have fluctuated, with no overall trends apparent over the past 25 years [Stewart et al. 2015; NSWDPI Unpublished data].

The minimum legal size in Queensland and New South Wales is set above the size at maturity for males and equal to the size at maturity for females, providing some protection of the spawning stock [Begg 1998; Begg and Sellin 1998]. Post-capture mortality of Spotted Mackerel is currently unknown. However, evidence suggests that other *Scomberomorus* species such as Spanish and Grey Mackerel experience at least 50% post capture mortality as a result of recreational fishing activity [O'Neill et al. 2018; Bessell-Browne et al. 2019] indicating a susceptibility to post capture mortality for Spotted Mackerel.

In Queensland, fishery-dependent monitoring of the recreational and commercial harvest shows relatively consistent length structures during the past 10 years [Bessell-Browne et al. 2018; QDAF Unpublished data]. Fishery-dependent monitoring indicates that a broad range of ages, including older fish (4–10-year-olds) were present in the harvest, with 2–5 year-olds dominating the catch [Bessell-Browne et al. 2018; QDAF Unpublished data]. These are positive indicators of a stable spawning biomass with continuing recruitment. The above evidence indicates that the biomass of the stock is unlikely to be depleted and that recruitment is unlikely to be impaired, and 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 entire Eastern Australia

biological stock is classified as a **sustainable stock**.

Northern Australia

Spotted Mackerel is broadly distributed across northern Australia, with components occurring in Western Australia, Northern Territory and Queensland [Begg et al. 1998a; Cameron and Begg 2002]. Stock status for the Northern Australia management unit is reported as Negligible due to historically low catches and the stock has not been subject to targeted fishing [Ryan et al. 2022; West et al. 2022; Webley et al. 2015; Teixeira et al. 2021].

Spotted Mackerel is not a major component of the commercial or recreational landings in any jurisdiction within the Northern Australia management units. In Western Australia, only the Mackerel Managed Fishery is licensed to land mackerel species and the catch of Spotted Mackerel has averaged 10 kg per year over the last five years, with only 6 kg reported in 2021–22. The species is not a major component of the recreational landings, estimated at 175 fish (+/- 86 se) in the 2020–21 boat-based survey [Ryan et al. 2022] and the 2021–22 WA Charter sector landed catch was 28 kg. In the Northern Territory, the recreational catch was estimated at 396 (+/-188 se) fish per annum in 2018–19 [West et al. 2022] and the commercial catch has averaged 1.2 t over the last 5 years with a maximum harvest of 3.3 t in 2016. In Queensland Gulf of Carpentaria waters, recreational and commercial catches are limited, with negligible commercial net and line harvests. There is a recreational possession limit of five Spotted Mackerel in both Northern Territory and Queensland waters. Fishing is unlikely to be having a negative impact on the stock.

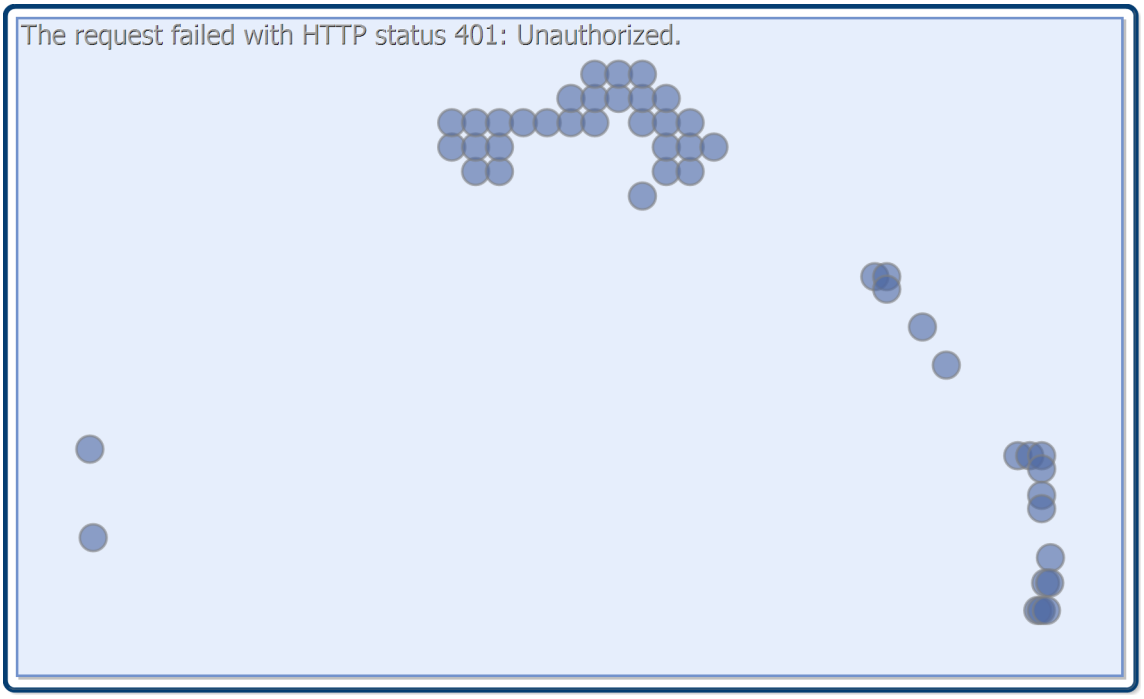
On the basis of the evidence provided above, the entire Nothern Australia stock is classified as a **negligible stock.**

BIOLOGY

Spotted Mackerel biology [Begg et al. 1998a; Cameron and Begg 2002; Begg et al. 2005; QDAF unpublished data]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Spotted Mackerel	10 years, 1,230 mm TL	Females 1–2 years, 600 mm TL; Males 1–2 years, 520 mm TL

DISTRIBUTION



Distribution of reported commercial catch of Spotted Mackerel

TABLES

Fishing methods				
	New South Wales	Northern Territory	Queensland	Western Australia
Charter				
Hook and Line	✓	✓	✓	✓
Commercial				
Drifting longline	✓			
Hook and Line	✓			
Line			✓	
Net			✓	
Trolling	✓			✓
Unspecified		✓		
Various	✓			
Recreational				
Hook and Line	✓	✓	✓	
Spearfishing	✓		✓	

Management Methods		
	New South Wales	Queensland
Charter		
Bag and possession limits	✓	
Bag limits	✓	
Bag/possession limits		✓
Gear restrictions	✓	✓
Licence	✓	
Marine park closures	✓	
Seasonal or spatial closures		✓
Size limit	✓	
Size limits		✓
Spatial closures	✓	
Commercial		
Bag/possession limits		✓
Gear restrictions	✓	✓
Harvest Strategy		✓
Limited entry	✓	✓
Marine park closures	✓	
Processing restrictions		✓
Seasonal or spatial closures		✓
Size limit	✓	
Size limits		✓
Spatial closures	✓	
Total allowable catch		✓

Vessel restrictions	✓	✓
Recreational		
Bag and possession limits	✓	
Bag limits	✓	
Bag/possession limits		✓
Gear restrictions	✓	✓
Licence	✓	
Marine park closures	✓	
Seasonal or spatial closures		✓
Size limit	✓	
Size limits		✓
Spatial closures	✓	

Catch				
	New South Wales	**Northern Territory**	**Queensland**	**Western Australia**
Charter		0.2 t	Included within Recreational	< 0.5 t (2021–22)
Commercial	2.50344 t	3.2698 t	34.7165 t	0 t
Indigenous	Unknown	Unknown	Unknown	
Recreational	4,674 fish (2019–20)	0.9 t (2015)	79 t (2019–20)	< 0.5 t (2020–21)

Queensland – Recreational (Catch). Data are based at the whole of Queensland level and derived from statewide recreational fishing surveys [Teixeira et al. 2021]. Where possible, estimates have been converted to weight (tonnes) using best known conversion multipliers. Conversion factors may display regional or temporal variability. In the absence of an adequate conversion factor, data presented as number of fish. Charter is included with Recreational.

Queensland – Indigenous (Management Methods). For more information see: https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing

Queensland – Commercial (Catch). Queensland commercial data have been sourced from the commercial fisheries logbook program. Further information available through the Queensland Fisheries Summary Report https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report

Queensland – Commercial (Management Methods). Harvest strategies are available at: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy

New South Wales – Recreational (Catch). Murphy et al. [2022].

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

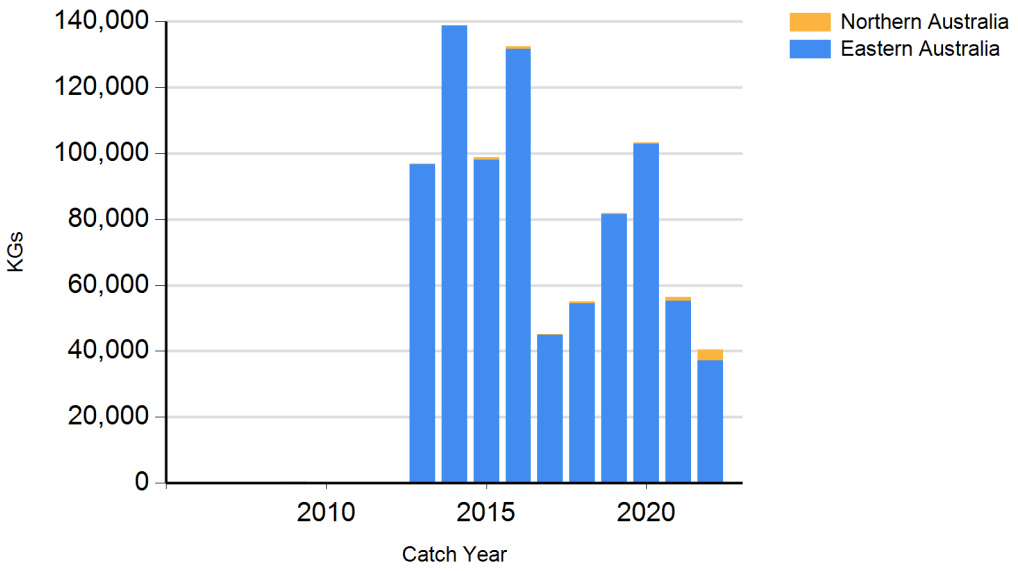
Northern Territory - Indigenous (Management Methods). The *Fisheries Act 1988* (NT), specifies that: “Unless expressly provided otherwise, nothing in this Act derogates or limits the right of Aboriginal people who have traditionally used the resources of an area of land or water in a traditional manner to continue to use those resources in that area in that manner.”

Western Australia – Recreational (Catch). Statewide survey of boat-based recreational fishing in Western Australia 2017/18 [Ryan et al. 2022]. Shore- based catch (if any) largely unknown.

Western Australia – Recreational (Management Methods). Boat-based recreational fishing licence required.

Western Australia – Charter (Catch). The charter catch is an estimate based on numbers of fish caught multiplied by an average weight.

CATCH CHART



Commercial catch of Spotted Mackerel - note confidential catch not shown

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