

Stripey Snapper (2023)

Lutjanus carponotatus



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth, Queensland	Eastern Australia	Sustainable	Catch
Commonwealth, Western Australia, Northern Territory, Queensland	Northern Australia	Sustainable	Catch, biomass, CPUE

STOCK STRUCTURE

Stripey Snapper is widely distributed throughout tropical and sub-tropical waters in the eastern Indian Ocean to the western Pacific Ocean, extending from India to northern Australia. In Australia, Stripey Snapper range from Shark Bay in Western Australia (possibly also ranges further south), north and east to at least Moreton Bay in Queensland, and possibly further south into northern New South Wales.

Genetic analysis of this species within the Great Barrier Reef across four inshore island groups revealed that there is significant gene flow within the population (Evans et al. 2010). Veilleux et al. (2011) examined mitochondrial DNA among populations from the Great Barrier Reef and Western Australia. These populations were found to be distinct, and as such, could be managed separately. There is little information on stock structure explicitly within the Gulf of Carpentaria. DiBattista et al. (2017) examined single nucleotide polymorphisms (SNPs) among individuals from 51 locations from the Northern Territory to Shark Bay in Western Australia and demonstrated significant genetic subdivision between the Shark Bay region in the south and all other locations sampled. Importantly, DiBattista et al. (2017) identified a zone of admixture spanning a distance of 180 km at the border of the Kimberley and Canning bioregions, including the Buccaneer Archipelago and adjacent waters, which collectively experiences the largest tropical tidal range and some of the fastest tidal currents in the world. This transition zone was

only identified using SNPs, as it was not detectable from the Kimberley and Pilbara/Canning populations of Stripey Snapper assessed using mitochondrial markers (Veilleux et al. 2011).

Overall, these studies indicate that four separate populations are present in Australian waters, comprising (i) the Queensland east coast, (ii) the Kimberley and Northern Territory, (iii) Pilbara region, and (iv) Shark Bay. Due to the logistic and operational constraints of the relevant monitoring, assessment and management agencies, assessment is only feasible at a broader management unit scale.

Here, assessment of stock status presented at the management unit level includes —Northern Australia (Commonwealth, Western Australia, Northern Territory and Queensland Gulf of Carpentaria); and Eastern Australia (Commonwealth, Queensland).

STOCK STATUS

Eastern Australia

Stripey Snapper in Eastern Australia is a shared stock between Queensland and the Commonwealth. However, Stripey snapper is not targeted in any Commonwealth fisheries and there was no reported catch in eight of the last 10 financial years (2012–13 to 2021–22) in Eastern Australia. Catch in 2017–18 was less than 1 t and catch in 2018–19 was under 20 kg. Commonwealth fishing is unlikely to be having a negative impact on the stock.

Stripey Snapper is retained on the Queensland east coast as part of the commercial Reef Line Fishery (RLF) where it is considered a secondary target. The commercial harvest of Stripey Snapper in the RLF is constrained by a multi-species Total Allowable Commercial Catch limit. The species is also subject to a range of harvest control rules contained in the Reef Line Fishery Harvest Strategy 2020-2025 [QDAF 2020]. For secondary target and by-product species like Stripey Snapper, the Harvest Strategy includes catch reference points that trigger stock assessments and implementation of species-specific commercial catch limits. These measures help minimise long-term sustainability risks and limits the extent of any potential increase in commercial harvest levels.

In addition to the Harvest Strategy, Stripey Snapper is managed by a minimum legal length limit (250 mm total length) that is greater than the size at which 100% of individuals have reached sexual maturity (240 mm total length) [Kritzer 2004]. Given that the area of the fishery is largely within the confines of the Great Barrier Reef Marine Park, this stock is provided additional protection by the 33% of the park that is fully protected from fishing and other zones within the park where fishing is limited. Heupel et al. [2009] also indicated that, although Stripey Snapper is a long lived (23 years) and a K select species typically associated with vulnerability to overfishing, the management regulations in Queensland were appropriate to maintain the population.

Commercial catch in Queensland reached a peak of 66 t in 2009–10 and has been steadily declining since then to 21 t in 2020–21 and increasing again to 25 t in 2021–22. This historical decline in catch is attributed to operators prioritising the capture and retention of live Coral Trout. Nominal commercial catch rates for Stripey Snapper have remained steady at around 2 kg per dory day (mean 1.7; range 1.5–2.2) despite the observed decline to annual harvest rates.

While Stripey Snapper is not considered a primary commercial target, it is an important and popular recreational species. Recreational harvest on the Queensland east coast is estimated to be around 10.5 t or 21,000 fish according

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to the most recent survey [DAF 2022; Teixeira et al. 2021]; around 2.7 t of this catch is landed by charter fishing operators.

Given the wide distribution of the species, protections from fishing in a significant area of the Marine Park, lesser focus and limited harvest of the species across sectors, consistent catch rate and large minimum size limit allowing 100% of fish to reach maturity before becoming susceptible to harvest, the available evidence indicates that the biomass of this stock is unlikely to be depleted. While there is no age-based stock assessment available, the available evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired and the harvest strategy in place would be triggered should fishing mortality increase significantly.

On the basis of the evidence provided above, Stripsey Snapper in Eastern Australia is classified as a **sustainable stock**.

**Northern
Australia**

Stripsey Snapper is not targeted by commercial fisheries in Western Australia but is landed in small quantities as byproduct in the North Demersal Scalefish Managed Fishery, Pilbara Line Fishery and Pilbara Trap Managed Fishery. Total catch levels of Stripsey Snapper in Western Australia over the last 10 years (2013–22) have ranged from 3.4–4.9 t with a mean annual catch of 4.1 t. Over the past 10 years where reliable catches estimates are available for the recreational and charter sectors, these catch levels are relatively high compared to the commercial catch, averaging approximately 80% of the total catch. Given the low catches of Stripsey Snapper in Western Australia are taken from a limited area compared to the wider distribution of the species, it is considered unlikely that the biomass of Stripsey Snapper in Western Australia is depleted.

Stripsey Snapper is not targeted by commercial fisheries in the Northern Territory and is caught in very small numbers by the Coastal Line Fishery (annual average < 0.15 t). However, the recreational and Fishing Tour Operator sectors do harvest substantial catches of this species (combined annual average approximately 49 t). The annual harvest from Northern Territory in 2022 is estimated at 57.6 t and has been declining since the peak harvest of 69.8 t in 2007 [Pazhayamadam et al. 2022]. Reports also indicate the trend in CPUE has increased since the drop during the peak catch in 2007 [Pazhayamadam et al. 2022]. Length composition data from fishery observers indicate that approximately 95% of the catch are longer than 190 mm total length [Pazhayamadam et al. 2022], the length at which 50% of the population becomes mature [Newman et al. 2000; Kritzer 2004]. This allows the majority of the population to spawn at least once before they become vulnerable to capture.

Stripsey snapper is not targeted in any of the Commonwealth fisheries and no Commonwealth commercial catch has been reported in Northern Australia in the last 10 financial years (2012–13 to 2021–22). Commonwealth fishing is unlikely to be having a negative impact on the stock.

In the Queensland part of the Northern Australia management unit, Stripsey Snapper can be harvested by trawl (GOCDFFTF) or line (GOCLF) in the Gulf of Carpentaria. Commercial harvest of Stripsey Snapper has not been recorded in the GOCLF for over a decade, and negligible amounts have been recorded in the trawl fishery (< 1 t). The Queensland harvest is considered to have a negligible effect on the stock status.

An assessment using catch data from the commercial and recreational sectors from Western Australia and Northern Territory applied to a modified catch-MSY

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model (developed by Martell and Froese [2013] and modified by Haddon et al. [2018]), estimated that the 2022 biomass of Stripey Snapper was well above the MSY reference levels [Pazhayamadam et al. 2022], suggesting that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Similarly, the fishing mortality in 2022 was 0.14 which was well below the limit reference point, indicating that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

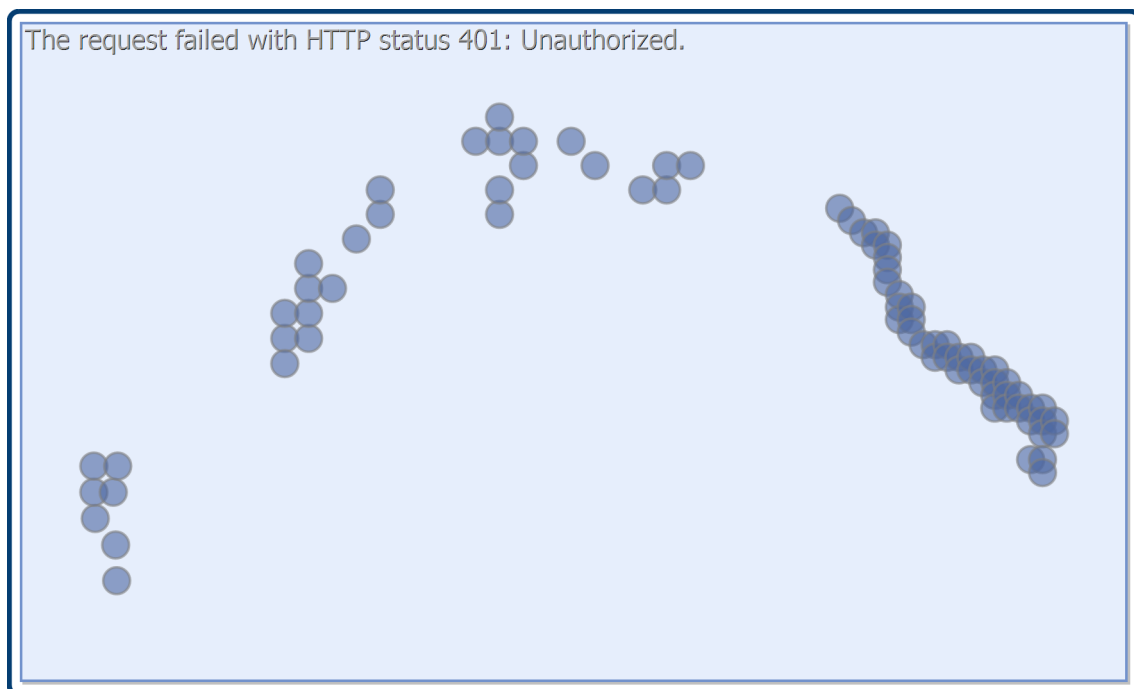
On the basis of the evidence provided above, Stripey Snapper in Northern Australia is classified as a **sustainable stock**.

BIOLOGY

Stripey Snapper biology [Newman *et al.* 2000; Kritzer 2004; Heupel *et al.* 2009]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Stripey Snapper	23 years, 335 mm FL	2 years, 190 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Stripey Snapper.

TABLES

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Fishing methods				
	Commonweal th	Northern Territory	Queensland	Western Australia
Charter				
Hook and Line		✓	✓	✓
Spearfishing		✓	✓	✓
Commercial				
Fish Trap				✓
Hand Line, Hand Reel or Powered Reels				✓
Handline (mechanised)	✓			
Line			✓	
Unspecified		✓		
Recreational				
Hook and Line		✓	✓	✓
Spearfishing		✓	✓	✓

Management Methods			
	Northern Territory	Queensland	Western Australia
Charter			
Bag and possession limits		✓	✓
Gear restrictions		✓	✓
Licence			✓
Limited entry			✓
Passenger restrictions			✓
Possession limit	✓		
Size limits		✓	✓
Spatial closures	✓	✓	✓
Spatial zoning		✓	✓

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Temporal closures (spawning season)		✓	
Vessel limits	✓		
Commercial			
Effort limits			✓
Gear restrictions		✓	✓
Harvest Strategy		✓	
Limited entry		✓	✓
Size limits		✓	
Spatial closures		✓	✓
Spatial zoning		✓	✓
Temporal closures (spawning season)		✓	
Total allowable catch		✓	✓
Total allowable effort			✓
Vessel restrictions		✓	✓
Recreational			
Bag and possession limits		✓	
Bag limits			✓
Gear restrictions		✓	✓
Licence (Recreational Fishing from Boat License)			✓
Possession limit	✓		✓
Size limits		✓	✓
Spatial closures	✓	✓	✓

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Spatial zoning		✓	
Temporal closures (spawning season)		✓	
Vessel limits	✓		

Catch				
	Commonwealth	Northern Territory	Queensland	Western Australia
Charter		18.7 t	2.7 t	1.1 t
Commercial	0 t	3.3583 t	21 t (2021–22)	1.1559 t
Indigenous		Unknown	Unknown	Unknown
Recreational		39.7 t (2017)	10.5 t (2019–20)	2.5 t (2020–21)

Commonwealth – Commercial (Catch). Data provided for the Commonwealth align with the Commonwealth Coral Sea Fishery for the 2021–22 financial year.

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

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

Queensland – Recreational Fishing (Catch). Data are based at the whole of Queensland level and derived from statewide recreational fishing surveys. 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.

Queensland – Commercial (Catch). Queensland commercial and charter data has 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 available are at: <https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy>

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.”

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.

Western Australia – Active Vessels. Data are confidential as there were fewer than three vessels operating in Pilbara Fish Trawl Interim Managed Fishery and Pilbara Trap Managed Fishery.

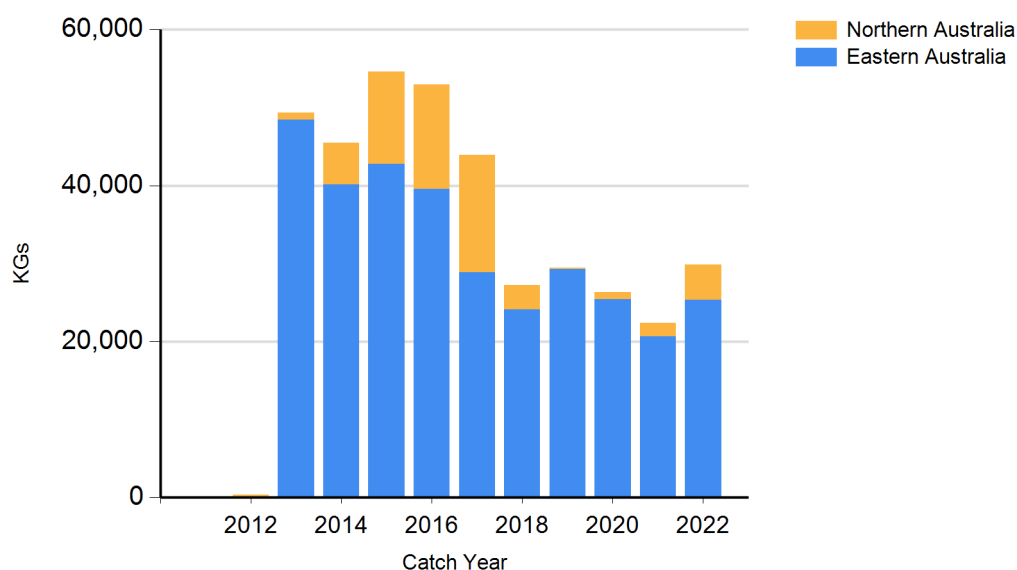
Western Australia – Recreational (Catch). Boat-based recreational catch is from 1 September 2020 – 31 August 2021. These data are derived from those reported in Ryan et al. [2022].

Western Australia – Recreational (Management Methods). A Recreational Fishing from Boat License is required for the use of a powered boat to fish or to transport catch or fishing gear to or from a land-based fishing location.

Western Australia – Indigenous (Management Methods). Subject to application of Section 211 of the *Native Title Act 1993* (Cth), and the exemption from a requirement to hold a recreational fishing licence, the non-commercial take by Indigenous fishers is covered by the same arrangements as that for recreational fishing.

CATCH CHART

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Commercial catch of Stripey Snapper - note confidential catch not shown

References	
Newman et al. 2000	Newman, SJ, Cappo, M, and Williams, DM 2000, Age, growth and mortality of the stripey, <i>Lutjanus carponotatus</i> (Richardson) and the brown-stripe snapper, <i>L. vitta</i> (Quoy and Giamard) from the central Great Barrier Reef, Australia
Kritzer 2004	Kritzer, JP 2004, Sex-specific growth and mortality, spawning season, and female maturation of the stripey bass (<i>Lutjanus carponotatus</i>) on the Great Barrier Reef, <i>Fisheries bulletin</i> 102: 94–107
DiBattista et al. 2017	DiBattista, JD, Travers, MJ, Moore, GI, Evans, RD, Newman, SJ, Feng, M, Moyle, SD, Gorton, RJ, Saunders, T and Berry, O 2017, Seascape genomics reveals fine-scale patterns of dispersal for a reef fish along the ecologically divergent coast of Northwestern Australia, <i>Molecular Ecology</i> 26 (22): 6206-6223.
Veilleux et al. 2011	Veilleux, H, van Herwerden, L, Evans, RD, Travers, MJ and Newman, SJ 2011, Strong genetic subdivision generates high genetic variability among eastern and western Australian populations of <i>Lutjanus carponotatus</i> (Richardson), <i>Fisheries Research</i> 108 (1): 74-80.
Evans et al. 2010	Evans, RD, Van Herwerden, L, Russ, GR and Frisch, AJ 2010, Strong genetic but not spatial subdivision of two reef fish species targeted by fishers on the Great Barrier Reef, <i>Fisheries research</i> , 102(1-2), 16-25.
Heupel et al. 2009	Heupel, MR, Currey, LM, Williams, AJ, Simpfendorfer, CA, Ballagh, AC and Penny, AL 2009, The Comparative Biology of Lutjanid Species on the Great Barrier Reef; Project Milestone Report, Report to the Marine and Tropical Sciences Research Facility. Reef and Rainforest Research Centre Limited, Cairns.
QDAF 2020	Queensland Department of Agriculture and Fisheries 2020, Reef line fishery harvest strategy: 2020–2025. Brisbane, Queensland.
Haddon et al. 2018	Haddon, M, Punt, A and Burch, P 2018, simpleSA: A package containing functions to facilitate relatively simple stock assessments. R package version 0.1.18.
Martell and Froese 2013	Martell, S and Froese, R 2013, A simple method for estimating MSY from catch and resilience. <i>Fish and Fisheries</i> 14:504–514.
Pazhayamadom et al. 2022	Pazhayamadom, DG and Trinnie, F, 2022, Northern Australia Stripey Snapper Stock Status Summary—2022. Unpublished report.
Teixeira et al. 2021	Teixeira, D, Janes, R and Webley, J 2021, 2019–20 Statewide Recreational Fishing Survey Key Results. Project Report. State of Queensland, Brisbane.
QDAF 2022	Queensland Department of Agriculture and Fisheries 2022, Statewide recreational fishing surveys. Recreational fishing catch estimates dashboard. Accessed September 2023.

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