

Saddletail Snapper (2020)

Lutjanus malabaricus



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	North Coast Bioregion	Sustainable	Catch, indicator species status
Northern Territory	Joseph Bonaparte Gulf	Sustainable	Catch, biomass
Northern Territory	Timor, Arafura seas	Sustainable	Biomass, fishing mortality
Northern Territory, Queensland	Gulf of Carpentaria	Sustainable	Catch, biomass
Queensland	East Coast Queensland	Undefined	Catch, effort, CPUE

STOCK STRUCTURE

Saddletail Snapper is a widespread Indo-Pacific species found from Shark Bay in Western Australia, across northern Australia to the east coast of Queensland [Newman 2002]. Genetic studies indicate that three biological stocks occur across the species' Australian range: the North Coast Bioregion biological stock, the Northern Australian biological stock (including the Timor Sea, Arafura Sea and the Gulf of Carpentaria) and the East coast of Queensland biological stock [Elliot 1996, Salini et al. 2006]. Recently, Saunders et al. [2018] used otolith microchemistry and parasitology to identify separate biological Saddletail Snapper stocks in the Joseph Bonaparte Gulf, Timor and Arafura seas and Gulf of Carpentaria.

Here, assessments of stock status are presented at the biological stock level—North Coast Bioregion (Western Australia), Joseph Bonaparte Gulf and Timor-Arafura seas (Northern Territory), Gulf of Carpentaria (Northern Territory and Queensland) and East coast Queensland.

STOCK STATUS

East Coast Queensland Saddletail Snapper are mainly caught by hook and line by commercial and recreational fishers with the majority of harvest occurring within the Great Barrier Reef Marine Park (GBRMP) [QFISH 2020]. No stock assessment of Saddletail Snapper across this biological stock is available and there is no estimate of Maximum Sustainable Yield (MSY) for the East Coast Queensland stock of Saddletail Snapper. Recreational catches of Saddletail Snapper constituted around 70 per cent (162 tonnes (t)) of the total landings (232 t) for the species in 2019 [Teixeira et al. 2021]. Saddletail Snapper comprised approximately 80 per cent of the Crimson Snapper and Saddletail Snapper species complex reported during the 2019–20 recreational fishing survey [Teixeira et al. 2021]. Commercial catches in 2018–19 (70 t) were slightly above the previous ten year average (63 t) [QFISH 2020]. Around 2004, the reported commercial harvest declined from an average of 150 t per year following the expansion of no-take marine reserves within the GBRMP and the introduction of a quota management system for coral reef finfish. Both management interventions likely reduced commercial targeting of Saddletail Snapper. Commercial harvest has since increased to above 60 t.

Saddletail Snapper is a secondary target and by-product species in the Reef Line Fishery (RLF). While commercial harvest is only constrained by a multi-species total allowable commercial catch (TACC) and a minimum legal size, species-specific harvest control rules and catch reference points introduced in early 2020 for secondary target species including Saddletail Snapper through the RLF Harvest Strategy [QDAF 2020] provide additional harvest constraints. Harvest of Saddletail Snapper that exceeds the catch reference points and control rules will trigger a stock assessment and the implementation of an interim species specific TACC. Recreational harvest is also controlled through the minimum legal size and a possession limit. The Indigenous catch of Saddletail Snapper is unknown but is considered to be minor. A portion of the biomass is afforded some protection from fishing by zoning restricting or prohibiting fishing in the GBRMP, although this has not been quantified. There is insufficient information available to confidently classify the status of this stock.

On the basis of the evidence provided above, the East Coast Queensland biological stock is classified as an **undefined stock**.

Gulf of Carpentaria In this stock, Saddletail Snapper is mainly harvested by trawl vessels in the commercial Gulf of Carpentaria Developmental Fin Fish Trawl Fishery) (GOCDFFTF - Queensland) and Demersal Fishery (DF- Northern Territory). There is no reliable estimate of recreational or Indigenous harvest although it is likely to be relatively low given the offshore distribution of this species. Saddletail Snapper were also exposed to fishing from foreign fleets during the 1950s to the 1980s [O'Neill et al. 2011], but these catches (annual peak of 261 t) were substantially lower than contemporary levels. In the Queensland portion of this stock commercial catches were very low (average < 4 t) until they increased substantially during 2002–2013 (average 135 t). Fish trawl effort from the GOCDFFTF declined markedly after 2012 as a result of trawl effort being transferred to other stocks and there has been no catch of Saddletail Snapper by this fishery since 2016. However, in the Northern Territory portion of this stock an increase in the targeting of this species by the DF in 2019 led to a very large increase of the catch (860 t).

A preliminary assessment using catch data from all commercial fisheries applied to a modified catch-MSY model (developed by Martell and Froese [2013] and modified by Haddon et al. [2018]), estimated that the 2019 biomass of Saddletail Snapper was 35 per cent of unfished levels [Saunders and Roelofs 2020] suggesting that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. The model outputs indicate that the current Fishing Mortality (F) is above the limit point, however, 2018 and 2019 are the only years where this has happened. Additionally, a trawl survey conducted in 1990 predicted that the biomass of Saddletail Snapper in this stock

was approximately 14,000 t (Sainsbury et al. 1991) so even the peak catch in 2019 only represents approximately a 6% harvest fraction. Consequently, the high F predicted by the model is probably an artefact of relatively low historical catches, which do not represent the large biomass present and consequently bias F upwards and depletion downwards. Nevertheless, subsequent years will require close monitoring to ensure that the model bias is in fact true and unsustainable fishing pressure is not being exerted.

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

Joseph Bonaparte Gulf

Harvest of this Saddletail Snapper stock was first reported in 1988 and the average catch from trap and line vessels in the Demersal Fishery (DF) to 2011 was very small (average < 2 t) compared to the adjacent Timor-Arafura seas stock. From 2012 a trawler entered the fishery and catches increased to 354 t in the first year before declining to 252 t in 2019. A trawl survey conducted on this stock [Ramm 1994] suggested that the Saddletail Snapper biomass was relatively large (6 677 t). Consequently, the peak harvest represents approximately a 5 per cent harvest fraction. This evidence suggests that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Similarly, the harvest in 2019 is only a small fraction of the estimated biomass indicating that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

Based on the evidence above, the Joseph Bonaparte biological stock is classified as a **sustainable stock**.

North Coast Bioregion

Saddletail Snapper is caught primarily on the north-west coast of Western Australia as a component of the multispecies Pilbara Demersal Scalefish Fisheries (which includes the Pilbara Fish Trawl (Interim) Managed Fishery, the Pilbara Trap Managed Fishery and the Pilbara Line Fishery) in the Pilbara management region of the North Coast Bioregion; and as a component of the multispecies Northern Demersal Scalefish Managed Fishery (NDSMF) in the Kimberley management region of the North Coast Bioregion of Western Australia [Newman et al. 2020]. Saddletail Snapper is assessed on the basis of the status of several indicator species (including Red Emperor and Goldband Snapper in the Kimberley region) considered to provide reliable indices of overall fishing pressure on the entire inshore demersal suite of species occurring at depths of 30–250 m [Newman et al. 2018]. The major performance measures for these indicator species are estimates of spawning stock levels estimated using an integrated age-structured assessment. The target level of spawning biomass is 40 per cent of the unfished level, with a threshold reference level of 30 per cent and a limit reference level of 20 per cent of the estimate of initial spawning biomass [DPIRD 2017]. Indicator species assessments determined that the spawning biomass levels of each of the indicator species were either greater than the target level or between the target and the threshold level of the unfished level in the Pilbara Demersal Scalefish Fisheries in 2015. The spawning biomass levels of the indicator species were at the threshold level in the NDSMF in 2017 [Newman et al. 2020]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

The catch of Saddletail Snapper in the Pilbara Demersal Scalefish Fisheries has been low and stable for the past 10 years (2010–19), ranging from 68–113 t, with a mean annual catch of 86 t. The catch of Saddletail Snapper in the NDSMF has been variable for the past 10 years (2010–19), ranging from 87–251 t, with a mean annual catch of 134 t. The above evidence indicates 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 North Coast Bioregion

(Western Australia) biological stock is classified as a **sustainable stock**.

Timor, Arafura seas

Saddletail Snapper was one of several tropical snapper species that were heavily exploited in this stock by foreign fishing operations from the early 1970s to 1990 [O'Neill et al. 2011]. Annual catches by this fleet peaked in the late 1980s at 2 189 t. Domestic harvest was negligible until 1995 when trawl operations began. Since then catches from this stock have increased steadily to a maximum of 1529 t in 2015 before declining to 807 t in 2019 as operators targeted effort in other stocks. CPUE has increased substantially during 1996–2019 [Saunders 2020].

This stock was assessed using data up to 2019 using a stochastic stock reduction analysis (SRA) model [Saunders 2020]. Biomass levels were estimated to be 71 per cent of unfished levels, well above the limit reference point. The above evidence indicates that the biomass of this stock is unlikely to be recruitment impaired. The SRA outputs also indicated that the current fishing mortality was well below the level that could cause the stock to become recruitment impaired. The above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

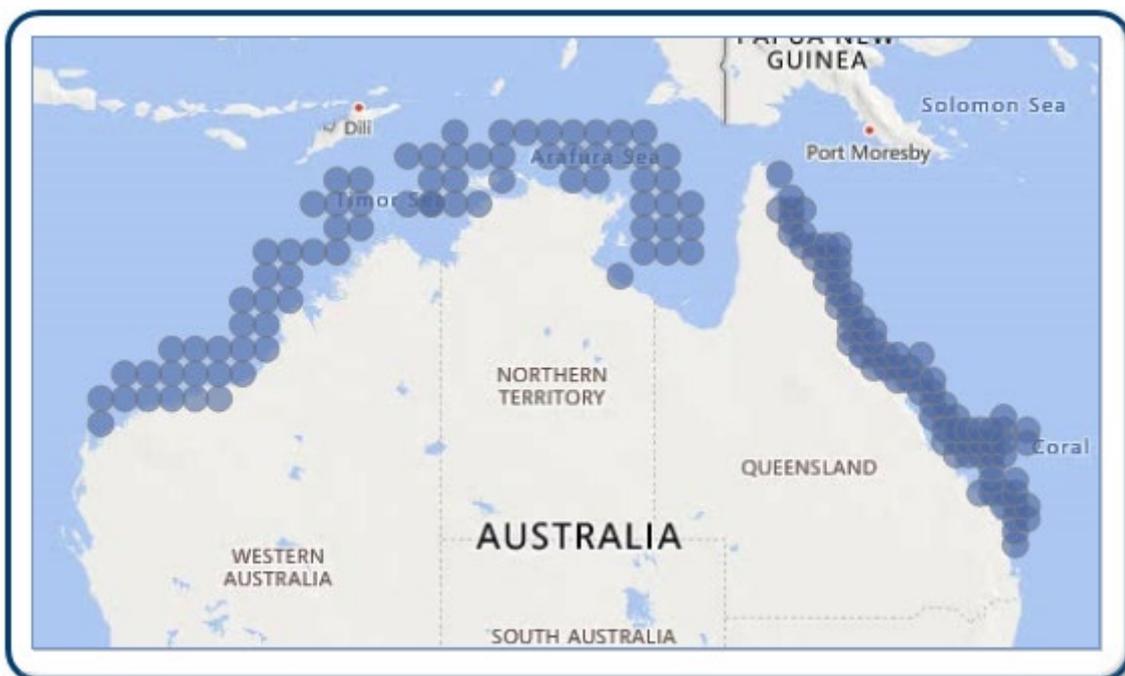
On the basis of the evidence provided above, the Timor-Arafura seas biological stock is classified as a **sustainable stock**.

BIOLOGY

Saddletail Snapper biology [Fry and Milton 2009, Fry et al. 2009, McPherson et al. 1992, McPherson and Squire 1992, Carpenter and Niem 2001, Newman 2002, Newman et al. 2000]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Saddletail Snapper	Northern and Western Australia: 33 years, 680 mm SL East coast Queensland, 20 years; 1000 mm TL	Northern and Western Australia: 9 years, Males 280 mm SL, Females 370 mm SL East coast Queensland: Females 576 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Saddletail Snapper – confidential catch is not shown

TABLES

Fishing methods			
	Northern Territory	Queensland	Western Australia
Charter			
Hook and Line	✓	✓	
Rod and reel			✓
Spearfishing		✓	
Commercial			
Bottom Trawls	✓	✓	
Fish Trap	✓		✓
Gillnet	✓		
Hand Line, Hand Reel or Powered Reels			✓
Handline	✓		
Line		✓	
Otter Trawl			✓
Recreational			
Hook and Line	✓	✓	✓
Spearfishing		✓	

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

Effort limits			✓
Gear restrictions	✓	✓	✓
Individual transferable quota		✓	
Limited entry		✓	✓
Size limit		✓	
Spatial closures	✓	✓	✓
Spatial zoning	✓		✓
Temporal closures		✓	
Total allowable catch	✓	✓	
Total allowable effort			✓
Vessel restrictions		✓	✓
Recreational			
Gear restrictions		✓	
Licence (Recreational Fishing from Boat License)			✓
Possession limit	✓	✓	✓
Size limit		✓	
Spatial closures	✓	✓	✓
Temporal closures		✓	

Catch	Northern Territory	Queensland	Western Australia
Charter	4.5 t		4 t
Commercial	2055.56 t	69.7183 t	339.045 t
Indigenous	Unknown	Unknown	Unknown
Recreational	18.2 t (2015)	162 t [2019-20]	Insufficient data

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

Western Australia – Recreational (Catch) Boat-based recreational catch is from 1 September 2017–31 August 2018. These data are derived from those reported in [Ryan et al. 2019].

Western Australia – Recreational (management methods) A Recreational Fishing from Boat Licence 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.

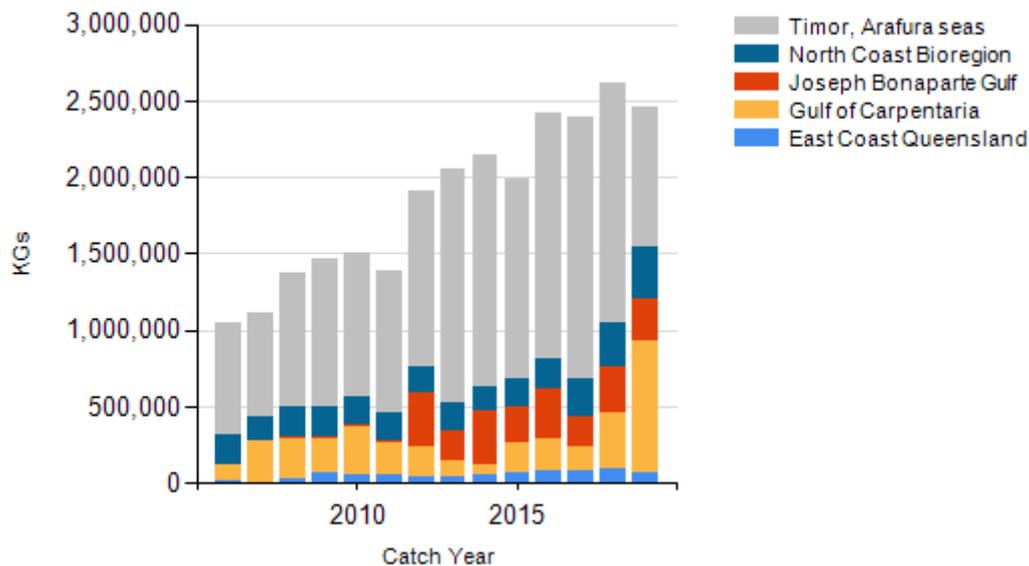
Northern Territory – Recreational (catch) Saddletail Snapper and Crimson Snapper catch were combined during the Northern Territory 2010 recreational fishing survey [West et al. 2012].

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>

CATCH CHART



Commercial catch of Saddletail Snapper - note confidential catch not shown

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