

Crimson Snapper (2020)

Lutjanus erythropterus



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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	Undefined	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

STOCK STRUCTURE

Crimson Snapper (*Lutjanus erythropterus*) is a widespread Indo-Pacific species found throughout tropical Australian waters. Research on the biological stock structure of this species in Australian waters has only occurred in northern Australia; including the Timor Sea, the Arafura Sea and the Gulf of Carpentaria [Salini et al. 2006]. A single genetic stock was found across this region. In addition to this Northern Australia biological stock, it is considered that the species has a similar biological stock structure to Saddletail Snapper (*Lutjanus malabaricus*), with a Western Australia (North Coast Bioregion) biological stock and a biological stock off the east coast of Queensland [Salini et al. 2006]. Recently, Saunders et al. [2018] used otolith microchemistry and parasitology to identify separate biological stocks of Saddletail Snapper in the Joseph Bonaparte Gulf, Timor and Arafura seas and Gulf of Carpentaria. It is assumed that Crimson Snapper have the same biological stock structure.

STOCK STATUS

East Coast Queensland Crimson snapper are mainly caught by line in both commercial and recreational fisheries and the majority of harvest is within the Great Barrier Reef Marine Park [QFISH 2020]. No stock assessment of Crimson Snapper across this biological stock is available and there is no estimate of MSY for the East Coast Queensland stock of Crimson Snapper. Recreational catches of Crimson Snapper constitute around 59 per cent (17 tonnes (t)) of the total landings for the species. Crimson Snapper comprised approximately 17–22 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 have gradually declined since 2009–10 from 23.7 t to 11.9 t in 2018–19.

Crimson Snapper is a secondary target and by-product species in the Reef Line Commercial Fishery (RLCF). 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 Crimson Snapper through the RLF Harvest Strategy [QDAF 2020] provide additional harvest constraints. Harvest of Crimson 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 Crimson Snapper is unknown but is considered to be minor. A portion of the biomass is afforded some protection from fishing zoning (restricting or prohibiting fishing) in parts of by the Great Barrier Reef Marine Park, although this has not been quantified. There is insufficient information available to confidently classify the status of this stock.

Based on the evidence provided above, the East Coast Queensland biological stock is classified as an **undefined stock**.

Gulf of Carpentaria In this stock, Crimson 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. Crimson Snapper were also exposed to fishing from foreign fleets during the 1950s to the 1980s [O'Neill et al. 2011], and these catches (peak of 513 t) were higher than contemporary levels. In the Queensland portion of this stock commercial catches were very low (average < 6 t) until they increased substantially during 2002–2013 (average 197 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 Crimson Snapper by this fishery since 2016. However, in the Northern Territory portion of this stock an increase in the targeting of Saddletail Snapper by the DF in 2019 led to a substantial increase (to 320 t) in Crimson Snapper catch.

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 [2018]), estimated that the 2019 biomass of Crimson Snapper was 41 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 F is above the limit point, however, 2019 was the first year since 2011 that this has happened so it is unlikely that the stock is depleting from this single breach of the limit. However, subsequent years will require close monitoring to ensure that any high catches are not causing the stock to deplete.

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

**Joseph
Bonaparte
Gulf**

Crimson Snapper harvest was first reported in this stock in 1988 and the average catch from trap and line vessels in the Demersal Fishery (DF) to 2011 was very small (average < 1 t) compared to the adjacent Timor-Arafura seas stock. From 2012 a trawler entered the fishery and catches increased to a peak of 99 t in 2018 before declining to 64 t in 2019. A trawl survey of this stock [Ramm 1994] only caught small numbers of Crimson Snapper. Consequently, it is unknown what impact these substantial increases have had on the biomass of this stock. Therefore, there is insufficient evidence to classify the status of this stock.

Based on the evidence above, the Joseph Bonaparte biological stock is classified as an **undefined stock**.

**North Coast
Bioregion**

Crimson 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 Northern Demersal Scalefish Managed Fishery (NDSMF) in the Kimberley management region of the North Coast Bioregion of Western Australia [Newman et al. 2020]. Crimson Snapper is assessed on the basis of the status of several indicator species (including, for example, Red Emperor and Goldband Snapper in the Kimberley region) that represent 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 in the Pilbara Demersal Scalefish Fisheries in 2015 (the year the last integrated assessment was undertaken). 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 Crimson Snapper in the Pilbara Demersal Scalefish Fisheries over the past 10 years (2010–19) have ranged from 147–236 t, with a mean annual catch of 182 t. The catch of Crimson Snapper in the NDSMF has been low and variable for the past 10 years (2010–19), ranging from 36–89 t, with a mean annual catch of 53 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 biological stock is classified as a **sustainable stock**.

**Timor,
Arafura
seas**

Crimson 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]. Catches by this fleet peaked in the late 1980s at 783 t. Domestic harvest was negligible until 1995 when trawl operations began. Since then catches from this stock have increased steadily to a maximum of 450 t in 2015 before declining to 286 t in 2019 as operators targeted effort in other stocks. CPUE declined substantially during 2000-2010, but has significantly increased since then [Saunders 2020].

This stock was assessed using data up to 2019 using a stochastic stock reduction analysis (SRA) model [Saunders 2020]. Biomass was estimated to be 65 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 pressure is unlikely to cause the stock to become recruitment impaired.

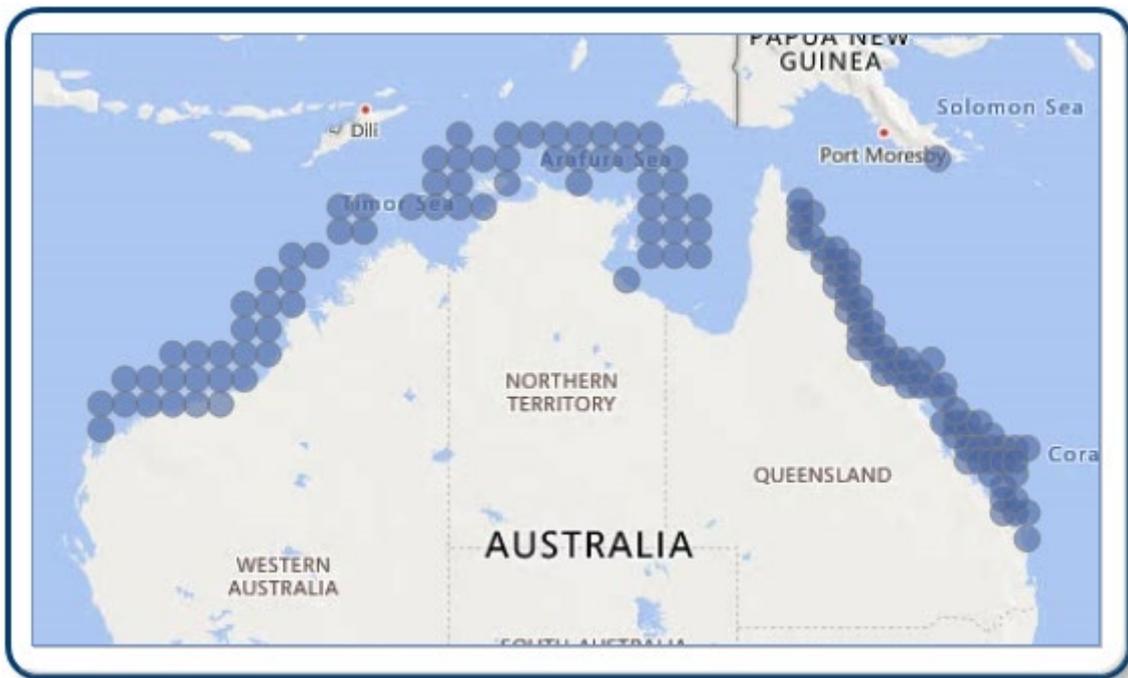
On the basis of the evidence provided above, the Timor-Arafura seas biological stock is classified as a **sustainable stock**.

BIOLOGY

Crimson Snapper biology [DAF unpublished data, Fry and Milton 2009, Fry et al. 2009, McPherson et al. 1992, McPherson and Squire 1992, Newman et al. 2000]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Crimson Snapper	Northern Australia: 42 years, 470 mm SL East Coast Queensland: 32 years, 790 mm FL	Northern Australia: Males 270 mm SL, Females 350 mm SL East Coast Queensland: Females 485 mm (+/- 1.7) FL

DISTRIBUTION



Distribution of reported commercial catch of Crimson Snapper

TABLES

Fishing methods	Northern Territory	Queensland	Western Australia
Charter			
Hook and Line	✓	✓	✓
Spearfishing		✓	

Commercial			
Bottom Trawls	✓		
Fish Trap	✓		✓
Hand Line, Hand Reel or Powered Reels			✓
Handline	✓		
Line		✓	
Otter Trawl			✓
Trawl		✓	
Recreational			
Handline			✓
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	✓	✓	✓
Limited entry		✓	✓
Quota		✓	
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	0.7 t		1 t
Commercial	677.451 t	11.9048 t	293.035 t
Indigenous	Unknown	Unknown	Unknown
Recreational	18.2 t (in 2015)	17 t [2019-20]	2 t (2017/18)

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

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 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.

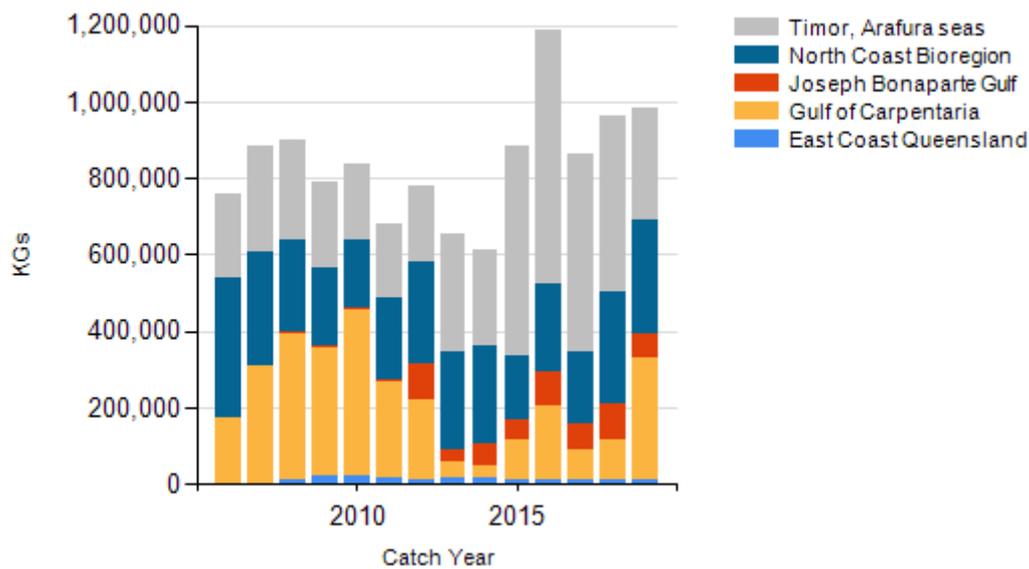
Northern Territory and Queensland – Recreational (catch) Saddletail Snapper and Crimson Snapper catch were combined during the Northern Territory 2010 recreational fishing survey [Matthews et al. 2019] and the Queensland 2013–14 recreational fishing survey [Webley et al. 2015].

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 Crimson Snapper - note confidential catch not shown

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