

Goldband Snapper (2016)

Pristipomoides multidentis



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Gascoyne	GDSMF, WCDSIMF	Sustainable	Age structure, catch
Western Australia	Kimberley	NDSMF	Sustainable	Biomass, age structure, catch, <u>CPUE</u>
Western Australia	Pilbara	PLF, PTMF, PFTIMF	Sustainable	Age structure, catch, <u>CPUE</u>
Northern Territory, Queensland	Northern Australia	DF, CLF, TRF, GOCDFFTF	Sustainable	Catch, <u>CPUE</u> , <u>SRA</u>
Queensland	East Coast Queensland	CRFFF	Undefined	Catch

DF, CLF, TRF Demersal Fishery, Coastal Line Fishery, Timor Reef Fishery (NT), CRFFF Coral Reef Fin Fish Fishery (QLD), GOCDFFTF Gulf of Carpentaria Developmental Fin Fish Trawl Fishery (QLD), GDSMF Gascoyne Demersal Scalefish Managed Fishery (WA), NDSMF Northern Demersal Scalefish Managed Fishery (WA), PLF Pilbara Line Fishery (WA), PTMF, PFTIMF Pilbara Trap Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA)

STOCK STRUCTURE

Goldband Snapper is widely distributed throughout northern Australia and the tropical Indo–West Pacific. Analysis of otolith stable isotopes indicates separate biological stocks in each of the three management regions in Western Australia (Kimberley, Pilbara and Gascoyne), and across northern Australia[1]. Separate biological stocks exist between Australia and Indonesia[2]. The existence of multiple biological stocks across northern Australia and Western Australia suggests that several biological stocks may also be present on the east coast, although this remains to be determined. Because biological stock delineation is known for this species in the Northern Territory (including the Gulf of Carpentaria in Queensland) and Western Australia, stock status is reported at the level of individual biological stocks. On the east coast of Queensland, in the absence of information on biological stock boundaries, status is reported at the level of the East coast (Queensland) management unit.

Here, assessment of stock status is presented at the biological stock level—Kimberley, Pilbara, Gascoyne (Western Australia) and Northern Australia; and at the management unit level—East

Cost (Queensland).

STOCK STATUS

East Coast Queensland No formal stock assessments have been undertaken to quantify biomass levels of Goldband Snapper on the east coast of Australia.

Species level reporting in commercial logbooks began in 2007 and has helped to quantify catch as a measure of fishing pressure. Catch trends of Goldband Snapper are monitored annually, but more information is required on attributes such as age structure to better understand fishing pressure. Commercial harvest is not effectively constrained as this species is managed as part of the 'other species' quota category, which comprises many other coral reef finfish species. There is a cap on the total catch for the group, but no individual cap on any one species within the group.

Therefore, 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) management unit is classified as an **undefined stock**.

Gascoyne The stock assessment for Goldband Snapper in the Gascoyne biological stock is based on an assessment of fishing mortality derived from catch curve analysis of representative samples of the age structure in the Gascoyne Demersal Scalefish Managed Fishery (Western Australia) (GDSMF). These fishing mortality-based assessments use reference levels that are based on ratios of natural mortality for each species, such that $F_{target} = 2/3M$, $F_{threshold} = M$ and $F_{limit} = 3/2M$. The fishing mortality-based assessments indicated that the estimated fishing level on Goldband Snapper in this biological stock was below the fishing mortality target level in 2006 and 2008[3]. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished.

Goldband Snapper catches from the GDSMF (Gascoyne biological stock) ranged from 240–311 t between 2002 and 2004[3]. Catch levels from 2005–09 were lower, ranging between 105 and 144 t[3]. Catch levels since 2010 have been much reduced, ranging between 53 and 73 t[3]. The above evidence indicates that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

Kimberley Goldband Snapper is exploited in the North Coast and Gascoyne Bioregions of Western Australia[3]. It is one of the indicator species used to assess the status of the demersal resources in the North Coast Bioregion.

The major performance measures for Goldband Snapper in the Kimberley biological stock are estimates of spawning stock levels in the Northern Demersal Scalefish Fishery (Western Australia) (NDSMF). The target level of spawning biomass is 40 per cent of the unfished (1980) level. The limit level is 30 per cent of the initial spawning biomass. The spawning biomass of Goldband Snapper was estimated to be approximately 35 per cent of the unfished level in the Kimberley biological stock in 2014 (between the target and the threshold level), using an integrated age structured model[4]. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished.

Fishing mortality (F)-based assessments indicated that the median level of fishing mortality on Goldband Snapper in this biological stock was between the target and the threshold level in 2012[4]. These assessments use reference levels that are based on ratios of natural mortality (M) for each species, such that $F_{target} = 2/3M$, $F_{threshold} = M$ and $F_{limit} = 3/2M$. Goldband Snapper catches from the NDSMF (Kimberley biological stock) from 2008–14 have been relatively stable, ranging between 457 and 524 tonnes (t)[4]. The above evidence indicates that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

Northern Australia

The Northern Australian Goldband Snapper biological stock was assessed in 2011 and 2013 using a stochastic stock reduction analysis (SRA) model[5,6]. Egg production was estimated to be around 65 per cent of that prior to the start of the fishery, well above conventional fisheries target levels. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished.

Around 90 per cent of the catch is from the Timor Sea and western Arafura Sea. Catch from the Queensland Gulf of Carpentaria is relatively low, but not currently constrained by quota. The Northern Territory total allowable commercial catch for Goldband Snapper is 1300 t, 900 t in the Timor Reef Fishery and 400 t in the Demersal Fishery. In the Northern Territory, most Goldband Snapper has been harvested using trap and line gear. Line fishing rarely occurs now and an additional reduction in trap effort since 2013 has resulted in a decrease in the total catch. At the same time, trawl fishing effort has increased since 2012. In 2015, the total commercial catch of Goldband Snapper in the Northern Territory was 501 t, and 18 t was caught in Queensland. The SRA assessments indicated that the current harvest rate is below that required to achieve maximum sustainable yield. The above evidence indicates that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

Pilbara

The stock assessment for Goldband Snapper in the Pilbara biological stock is based on an assessment of fishing mortality derived from catch curve analysis of representative samples of the age structure in the Pilbara demersal fisheries (Pilbara Fish Trawl Interim Managed Fishery, Pilbara Line Fishery and Pilbara Trap Managed Fishery). These fishing mortality-based assessments use reference levels that are based on ratios of natural mortality for each species, such that $F_{target} = 2/3M$, $F_{threshold} = M$ and $F_{limit} = 3/2M$. The fishing mortality-based assessments indicated that the estimated fishing level on Goldband Snapper in this biological stock was either below the fishing mortality target level, or between the target and threshold levels in 2008, depending on the area of the fisheries[4]. This indicates that fishing is not having an unacceptable impact on the age structure of the population. The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished.

Goldband Snapper catches from the Pilbara demersal fisheries (Pilbara biological stock) from 2006–14 have also been stable under current fishing pressure, ranging between 112 and 168 t[4]. The above evidence indicates that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

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

BIOLOGY

Goldband Snapper biology[1,2,7,8]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Goldband Snapper	30 years; 700 mm <u>FL</u> , 810 mm <u>TL</u>	8 years; 470 mm <u>FL</u> , 550 mm <u>TL</u>

DISTRIBUTION



Distribution of reported commercial catch of Goldband Snapper

TABLES

Commercial Catch Methods	Northern Territory	Queensland	Western Australia
Line		✓	
Otter Trawl		✓	
Various	✓		✓

Fishing methods	Northern Territory	Queensland	Western Australia
Commercial			
Line		✓	
Otter Trawl		✓	
Various	✓		✓

Indigenous			
Hand Line, Hand Reel or Powered Reels		✓	
Recreational			
Hand Line, Hand Reel or Powered Reels	✓	✓	✓
Management Methods			
	Northern Territory	Queensland	Western Australia
Commercial			
Effort limits			✓
Gear restrictions	✓	✓	✓
Limited entry		✓	✓
Size limit		✓	
Spatial closures		✓	✓
Spatial zoning	✓		✓
Temporal closures		✓	
Total allowable catch	✓	✓	✓
Total allowable effort			✓
Vessel restrictions		✓	✓
Indigenous			
Laws of general application			✓
Recreational			
Bag limits			✓
Licence			✓
Limited entry			✓
Passenger restrictions			✓
Possession limit	✓	✓	✓
Size limit		✓	✓
Spatial closures	✓	✓	✓
Spatial zoning			✓

Temporal closures		✓	
Active Vessels			
	Northern Territory	Queensland	Western Australia
	8 license in DF, 8 license in TRF,	38 License in CRFFF, 2 License in GOCDFFTF,	16 Vessel in GDSMF, 8 Vessel in NDSMF, 6 Vessel in PLF,

DF Demersal Fishery(NT)

TRF Timor Reef Fishery(NT)

CRFFF Coral Reef Fin Fish Fishery(QLD)

GOCDFFTF Gulf of Carpentaria Developmental Fin Fish Trawl Fishery(QLD)

GDSMF Gascoyne Demersal Scalefish Managed Fishery(WA)

NDSMF Northern Demersal Scalefish Managed Fishery(WA)

PLF Pilbara Line Fishery(WA)

Catch			
	Northern Territory	Queensland	Western Australia
Commercial	571.874t in DF,CLF,TRF,	53.329t in CRFFF, 18.075t in GOCDFFTF,	60.2734t in GDSMF, 457.2t in NDSMF, 45.098t in PLF, 8.7528t in WCDSIMF,
Indigenous	Negligible	Unknown	Unknown
Recreational	0.5 t	1 t	12.92 t

DF,CLF,TRF Demersal Fishery, Coastal Line Fishery, Timor Reef Fishery (NT), CRFFF Coral Reef Fin Fish Fishery (QLD), GOCDFFTF Gulf of Carpentaria Developmental Fin Fish Trawl Fishery (QLD), GDSMF Gascoyne Demersal Scalefish Managed Fishery (WA), NDSMF Northern Demersal Scalefish Managed Fishery (WA), PLF Pilbara Line Fishery (WA), PTMF, PFTIMF Pilbara Trap Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA),

a Queensland For Queensland, the reporting period for the Coral Reef Fin Fish Fishery (Queensland) and Deep Water Fin Fish Fishery (Queensland) is financial year (2014–15).

b Queensland – Commercial (fishing methods) In Queensland, Goldband Snapper is trawled in only one of the Queensland fisheries in which it is caught commercially - the Gulf of Carpentaria Developmental Fin Fish Trawl Fishery.

c Indigenous Subject to the defence that applies under 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.

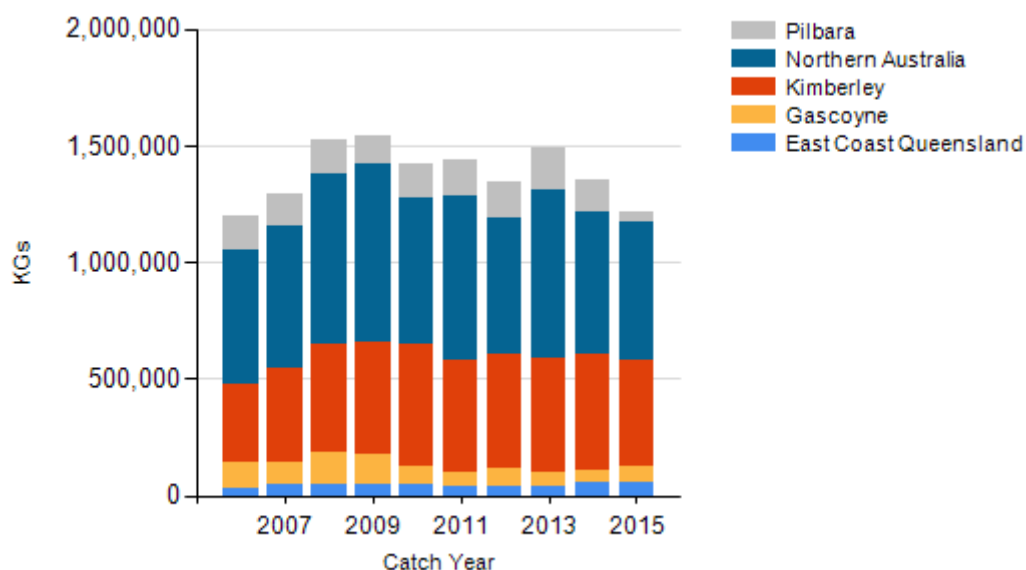
d Queensland – Indigenous Under the Fisheries Act 1994 (Qld), Indigenous fishers in Queensland are entitled to use prescribed traditional and non-commercial fishing apparatus in waters open to fishing. Size and possession limits, and seasonal closures do not apply to Indigenous fishers. Further exemptions to fishery regulations may be applied for through permits.

e Western Australia – Commercial (catch) Catch is unavailable as there were fewer than three vessels in Pilbara Fish Trawl Interim Managed Fishery (Western Australia) and Pilbara Trap Managed Fishery (Western Australia).

f Western Australia – Recreational (catch) Boat-based recreational catch from 1 May 2013–

30 April 2014.

CATCH CHART



Commercial catch of Goldband Snapper - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- The maintenance of high levels of adult biomass of Goldband Snapper in Western Australia, above biomass target levels, results in a low ecotrophic risk from these fisheries. Furthermore, there has been no reduction in either mean trophic level or mean maximum length in the finfish catches recorded within the Pilbara or Kimberley, Western Australia (that is, no fishing down of the food web)[11].
- The impacts on the benthic habitat of fishing activity for Goldband Snapper are limited to those of the trawl fisheries, which is restricted to around seven per cent of the north-west shelf of Western Australia[4] and parts of the Northern Territory.
- There are few bycatch issues associated with trap and line-based fishing. Bycatch of dolphins and turtles can occur in the fish trawls, but this has decreased significantly since the introduction of exclusion grids introduced in Western Australia in 2005 and the Northern Territory in 2006. Given the area of distribution and estimated population size of these protected species, the impact of the fish trawl fishery on the stocks of these protected species is likely to be minimal[12,13]. Gear and fishing modification continue to reduce this level of interaction[3,12,14].
- The Northern Territory fisheries that target Goldband Snapper have received full Export Exemption accreditation under the *Environment Protection and Biodiversity Conservation Act 1999*. The Western Australian and Queensland east coast fisheries that target Crimson Snapper have received Approved Wildlife Trade Operation Exemptions accreditation under the *Environment Protection and Biodiversity Conservation Act 1999* (except for the Pilbara Trap Managed Fishery [Western Australia] which does not export fish). These assessments, subject to adherence to any accompanying conditions and recommendations, demonstrate that these fisheries are managed in a manner that does not lead to overfishing, and that fishing operations have a minimal impact on the structure, productivity, function and biological diversity of the ecosystem.

ENVIRONMENTAL EFFECTS on Goldband Snapper

- Climate change and variability have the potential to impact fish stocks in a range of ways, including influencing their geographic distribution (for example, latitudinal shifts in distribution). However, it is unclear how climate change may affect risks to sustainability of this species. Slow growing and long lived species such as Goldband

Snapper are less likely to be affected by short duration environmental changes (of one or a few years), with adult stocks comprising fish recruited over many years.

- Changes in ocean chemistry such as ocean acidification have the potential to impact on the replenishment rates of fish populations by affecting larval survival[15], and also individual growth rates and spawning output[16].

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