Goldband Snapper (2018)

Pristipomoides multidens



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STOCK STATUS OVERVIEW

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

DF Demersal Fishery (NT), TRF Timor Reef Fishery (NT), LFR Line Fishery (Reef) (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), PFTIMF Pilbara Fish Trawl (Interim) Managed Fishery (WA), PLF Pilbara Line Fishery (WA), PTMF Pilbara Trap Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA), GDSMF || WCDSIMF Various Fisheries combined due to 3 boat rule (WA), PFTIMF || PLF || PTMF Various Fisheries combined due to 3 boat rule (WA)

STOCK STRUCTURE

Goldband Snapper is widely distributed throughout northern Australia and the tropical Indo–West Pacific. Ovenden et al. [2002] examined the genetic connectivity of Goldband Snapper using mitochondrial DNA from samples collected at six Australian locations (four in Western Australia: Exmouth, Pilbara, Broome, Northern Kimberley; two in the Northern Territory: Timor Sea, Arafura Sea) and three south east Asian locations (Kupang, Irian Jaya, Madang). The mitochondrial DNA data for Goldband Snapper did not differ genetically among Australian locations, except for the northern Kimberley location that exhibited restricted gene flow. Ovenden et al. [2002] reported that samples taken from locations in Southeast Asia were genetically distinct from those sampled from Australian locations. This study indicates that

Australian populations of Goldband Snapper are likely to form a single biological stock.

Newman et al. [2000] examined otolith stable isotopes in each of three management regions in Western Australia (Kimberley, Pilbara and Gascoyne), and across northern Australia. Significant differences in stable isotope ratios provided evidence that there was limited mixing of adult Goldband Snapper between all sites sampled in Australia, Indonesia and Papua New Guinea. Therefore, each of these broad locations could be treated separately for the purposes of fishery management, if management arrangements were mediated in a way that harmonized with the spatial patterns of exploitation. The study of Newman et al. [2000] indicates that Goldband Snapper is likely to consist of a number of separate management units around western, northern and eastern Australia.

Here, assessment of stock status is presented at the management unit level—Kimberley, Pilbara, Gascoyne (Western Australia); Northern Australia (Northern Territory and Queensland); and East Coast 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 an indicator 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. Catch in 2017 reached a peak of 59 t. There are no estimates of Indigenous or recreational harvest for this management unit. There is insufficient information available to confidently classify the status of this stock.

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

Gascoyne

The stock assessment for Goldband Snapper in the Gascoyne management unit 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 (GDSMF, Western Australia). These fishing mortality-based assessments use reference levels that are based on ratios of natural mortality for each species: such that Ftarget = 2/3M, Fthreshold = M and Flimit = 3/2M [DPIRD 2017]. An assessment of fishing mortality for Goldband Snapper was undertaken in the GDSMF in 2017. The fishing mortality based assessment and associated uncertainty ranges indicated that the fishing levels on Goldband Snapper in this management unit were less than the fishing mortality target level. This indicates that, on average, the level of exploitation experienced by Goldband Snapper in the Gascoyne has been low. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Goldband Snapper catches from the GDSMF (Gascoyne management unit) ranged from 240–311 tonnes (t) between 2002 and 2004 [Gaughan and Santoro 2018]. Catch levels from 2005–09 were lower, ranging between 105 and 144 t. Catch levels since 2010 have been much reduced, ranging from 33–78 t. The catch of Goldband Snapper in the GDSMF has been low and stable for the past five years (2013–17), ranging from 48–72 t, with a mean annual catch of 60.5 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 Gascoyne (Western Australia)

management unit is classified as a **sustainable stock**.

Kimberley

Goldband Snapper is exploited throughout its distribution in Western Australia. It is one of the indicator species used to assess the status of the demersal scalefish resources in the Kimberley subregion of the North Coast Bioregion of Western Australia [Newman et al. 2018b].

The major performance measures for Goldband Snapper in the Kimberley management unit are estimates of spawning stock levels in the Northern Demersal Scalefish Managed Fishery (Western Australia) (NDSMF) using an integrated age-structured stock assessment. 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 [DPIRD 2017]. The spawning biomass of Goldband Snapper was estimated to be approximately 35 per cent of the unfished level in the Kimberley management unit (i.e. between the target and the threshold reference levels) in 2015 (the year the last integrated assessment was undertaken) [Newman et al. 2018a]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Fishing mortality based assessments indicated that the median level of fishing mortality on Goldband Snapper in this management unit were between the target and the threshold levels in 2015 [Newman et al. 2018a]. These fishing mortality based assessments utilise the fishing mortality rate reference levels defined above for the Gascoyne management unit. Goldband Snapper catches from the NDSMF (Kimberley management unit) over the last 10 years (2008–17) have been relatively stable, ranging between 400 and 523 t. The catch of Goldband Snapper in the NDSMF has also been relatively stable for the past five years (2013–17), ranging from 400–500 t, with a mean annual catch of 462 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 Kimberley (Western Australia) management unit is classified as a **sustainable stock**.

Northern Australia

The Northern Australia Goldband Snapper biological stock was assessed in using data up to 2016 using a stochastic stock reduction analysis (SRA) model [Martin 2018]. Egg production was estimated to be between 60–70 per cent of unfished levels, well above conventional fisheries target levels. The above evidence indicates that the biomass of this stock is unlikely to be recruitment impaired.

Around 90 per cent of the catch is from the Timor Sea and western Arafura Sea [NTG 2018]. 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 1 300 t. 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 2017, the total commercial catch of Goldband Snapper in the Northern Territory was 501 t, and there was no catch in Queensland. The SRA outputs indicated that there is less than a 3 per cent chance of current fishing mortality causing the stock to become recruitment impaired [Martin 2018]. 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 Northern Australia management unit is classified as a sustainable stock.

Pilbara

A stock assessment for Goldband Snapper in the Pilbara management unit was undertaken in 2009, based on an assessment of fishing mortality derived from

catch curve analysis of representative samples of the age structure in the Pilbara demersal scalefish fisheries (Pilbara Fish Trawl Interim Managed Fishery, Pilbara Line Fishery and Pilbara Trap Managed Fishery). These fishing mortality based assessments utilise the reference levels defined above for the Gascoyne management unit. The fishing mortality based assessments indicated that the estimated fishing level on Goldband Snapper in this management unit was either below the fishing mortality target level, or between the target and threshold levels in 2008, depending on the area of the fisheries [Newman et al. 2018a]. This indicates that fishing at that time was not having an unacceptable impact on the age structure of the population. Subsequently, assessment of the overall demersal fish resource in the region has been based on indicator species selected from the suite of demersal scalefish taken (based on their inherent vulnerability and overall risk to sustainability) [Newman et al. 2018a]. The levels of fishing mortality on the indicator species, Red Emperor, Rankin Cod and Bluespotted Emperor in the Pilbara subregion of the North Coast Bioregion of Western Australia [Newman et al. 2018b] overall, were either less than the target level or between the target and the threshold level.

Goldband Snapper catches from the Pilbara demersal scalefish fisheries (Pilbara management unit) over the last 10 years (2008–17) have ranged from 113–208 t. The catch of Goldband Snapper in the Pilbara demersal scalefish fisheries has been consistent and stable for the past five years (2013–17), ranging from 143–208 t, with a mean annual catch of 187 t. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, 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 Pilbara (Western Australia) management unit is classified as a **sustainable stock**.

BIOLOGY

Goldband Snapper biology [Newman et al. 2001, Newman and Dunk 2003, Wakefield et al. unpublished data]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Goldband Snapper	30 years, 700 mm FL, 810 mm TL	4.6 years, 417 mm FL , 526 mm TL

DISTRIBUTION



Distribution of reported commercial catch of Goldband Snapper

TABLES

Commercial Catch Methods	Northern Territory	Queensland	Western Australia
Demersal Longline	✓		
Dropline	✓		✓
Fish Trap	✓		✓
Hand Line, Hand Reel or Powered Reels			✓
Hook and Line	✓	✓	
Otter Trawl	✓		✓
Pelagic Gillnet	✓		
Trawl		✓	
Trolling	✓		
Trotline	✓		
Unspecified			✓

Fishing methods			
	Northern Territory	Queensland	Western Australia
Charter			
Hook and Line			✓
Commercial			
Dropline	✓		
Fish Trap	✓		✓
Hand Line, Hand Reel or Powered Reels			✓

Hook and Line		✓	
Otter Trawl	✓		✓
Trawl		✓	
Unspecified			✓
Recreational			
Hook and Line	✓	✓	✓

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		✓	✓
Size limit		✓	
Spatial closures		✓	✓
Spatial zoning	✓		✓
Temporal closures		✓	
Total allowable catch	✓	✓	✓
Total allowable effort			✓
Vessel restrictions		✓	✓
Recreational			
Bag limits			✓
Gear restrictions		✓	
Licence			✓

(Recreational Fishing from Boat License)			
Possession limit	✓	✓	✓
Size limit		✓	✓
Spatial closures	✓	✓	✓
Temporal closures		✓	

Active Vessels			
	Northern Territory	**Queensland**	**Western Australia**
	8 LICENCES in DF, 5 LICENCES in TRF,	50 in CRFFF, 0 in GOCDFFTF,	13 in GDSMF, <3 in PFTIMF, 8 in PLF, <3 in PTMF, 5 in WCDSIMF, 17 in Charter, 6 in NDSF,

DF Demersal Fishery(NT)

TRF Timor Reef Fishery(NT)

LFR Line Fishery (Reef)(QLD)

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

GDSMF Gascoyne Demersal Scalefish Managed Fishery(WA)

PFTIMF Pilbara Fish Trawl (Interim) Managed Fishery(WA)

PLF Pilbara Line Fishery(WA)

PTMF Pilbara Trap Managed Fishery(WA)

WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery(WA)

Charter Tour Operator(WA)

NDSF Northern Demersal Scalefish Fishery(WA)

Catch			
	Northern Territory	**Queensland**	**Western Australia**
Charter			12.29 t
Commercial	340.693t in DF, 194.508t in TRF,	59.329t in CRFFF, 0t in GOCDFFTF,	72.1316t in GDSMF || WCDSIMF, 473.365t in NDSMF, 203.491t in PFTIMF || PLF || PTMF,
Indigenous	Unknown	Unknown	Unknown
Recreational	0.5 t (in 2010)	1 t	15.37 t ± 4.30 t se

DF Demersal Fishery (NT), TRF Timor Reef Fishery (NT), LFR Line Fishery (Reef) (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), PFTIMF Pilbara Fish Trawl (Interim) Managed Fishery (WA), PLF Pilbara Line Fishery (WA), PTMF Pilbara Trap Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA), GDSMF || WCDSIMF Various Fisheries combined due to 3 boat rule (WA), PFTIMF || PLF || PTMF Various Fisheries combined due to 3 boat rule (WA),

Western Australia – Commercial (catch) Goldband Snapper forms part of the combined Total Allowable Commercial Catch for other mixed demersal species in the GDSMF.

Western Australia – **Active Vessels** Data is 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 2015–31 August 2016. These data are derived from those reported in Ryan et al. 2017.

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 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.

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.

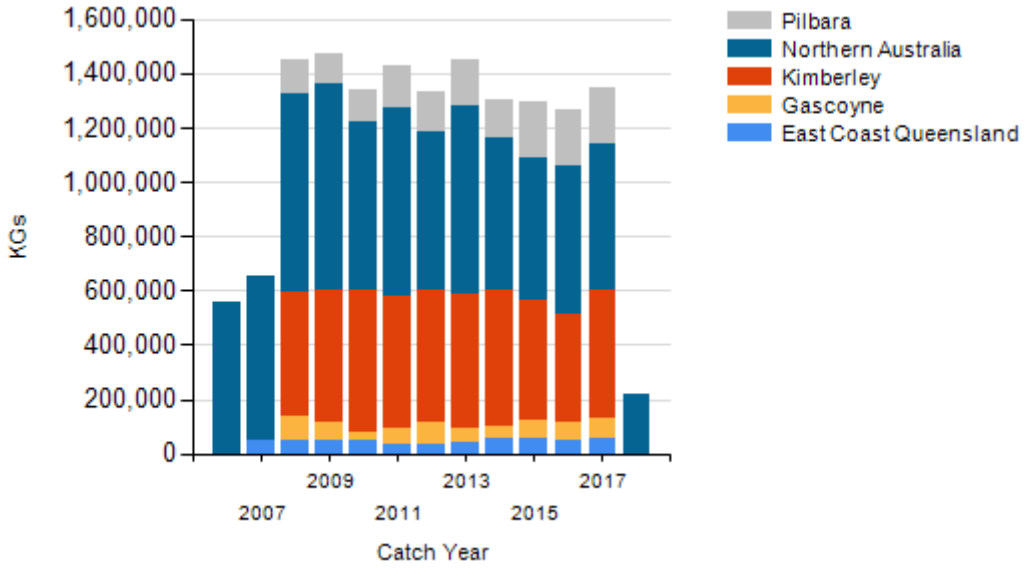
Northern Territory – Indigenous (management methods) The *Fisheries Act* 1988 (NT), specifies that "…without derogating from any other law in force in the Territory, nothing in a provision of this Act or an instrument of a judicial or administrative character made under it limits the right of Aboriginals 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 – Commercial (catch) For Queensland, the normal reporting period for the Coral Reef Fin Fish Fishery is financial year. The above commercial catch total listed above however is for calendar year (2017).

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.

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.

CATCH CHART



Commercial catch of Goldband Snapper - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Goldband Snapper

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