

Blue Threadfin (2020)

Eleutheronema tetradactylum



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Western Australia	Negligible	Catch
Northern Territory	Northern Territory	Sustainable	Catch, estimated harvest rate
Queensland	East Coast Queensland	Sustainable	Catch, effort, CPUE
Queensland	Gulf of Carpentaria	Sustainable	Catch, effort, CPUE

STOCK STRUCTURE

Blue Threadfin is widely distributed in coastal waters throughout the Indo-West Pacific. Its range extends from the Persian Gulf eastward around the Indian Ocean rim to the Malay Peninsula, Gulf of Thailand, mouth of the Mekong River delta, China, Taiwan Province, Philippines, through Indonesia to southern New Guinea and northern Australia and in the north to southern Japan [Carpenter and Niem 2001]. In Australia, Blue Threadfin extend from the Exmouth Gulf region in Western Australia around the northern coastline to Sandy Cape in southern Queensland [Carpenter and Niem 2001].

A number of methods (genetics, otolith stable isotope chemistry, parasite abundances, life history and tag-recapture data) have been used to examine population structure in the Blue Threadfin [Zischke et al. 2009, Welch et al. 2010, Horne et al. 2011, Moore et al. 2011, Newman et al. 2011, Ballagh et al. 2012, Horne et al. 2012, Horne et al. 2013]. These studies have shown that adult Blue Threadfin do not move very far and tend to form localised populations around northern Australia. A tagging study on Blue Threadfin on the east coast of Australia found that ~70 per cent of tagged Blue Threadfin were recaptured within 10 km of their release location [Zischke et al. 2009]. Blue Threadfin comprise numerous populations across northern Australia that are separated by 10–100s km or by large, coastal geographical features, and which exhibit high levels of self-recruitment [Zischke et al. 2009, Welch et al. 2010, Horne et al. 2011, Moore et al. 2011, Newman et al. 2011, Ballagh et al. 2012, Horne et al. 2012, Horne et al. 2013]. There is a high likelihood of separate biological stocks occurring in each jurisdiction; however, the boundaries between possible stocks and whether they might vary over time, are not known. It is difficult to collect the biological and catch-and-effort

information to determine the status of individual biological stocks.

Here, assessment of stock status is presented at the management unit level in Queensland—Gulf of Carpentaria and East Coast Queensland, and at the jurisdictional level—Western Australia and Northern Territory.

STOCK STATUS

East Coast Queensland Blue Threadfin is primarily caught in the East Coast Inshore Fin Fish Fishery (using nets), but tends not to be a primary target. The species is occasionally caught in the East Coast Line Fishery. Commercial catch and catch rates decreased in 2016 following the introduction of three new net closure areas in November 2015 and a net licence buy-back scheme. Average annual catch for the three Net Free Zones prior to this management change (2006–15) was Capricorn Coast 34 tonnes (t), Trinity Bay 5 t, St Helens 3.2 t [Whybird et al. 2018]. When catches from the Net Free Zones are excluded from the whole time series the average catch from 2016 to 2019 was 59 t compared to the 2006–15 average of 113 t [QFISH 2020]. Commercial catch rates rose steeply from 6 to 14 kg per 100 m of net from 1988 to 1994, then stabilised at a rate of 10–12 kg per 100 m net until 2015. After some of the productive areas for this species were closed in November 2015, commercial catch rates decreased to 6.5 and 7.6 kg per 100 m from 2016 and 2019, and remain above 50 per cent of the long-term average. The above evidence indicates the biomass of the stock is unlikely to be depleted and that recruitment is unlikely to be impaired

Blue Threadfin is a short lived, fast growing species, that has a low susceptibility to fishing pressure [Welch et al. 2010], despite its high discard mortality and the minimum legal size being less than the size at which males transition to females [Bibby et al. 1997]. Management changes in 2015 reduced fishing pressure by decreasing the number of licences and fishing days, and protecting additional areas from commercial harvest. In 2013, a reported 4 368 net fishing days were recorded, declining to 2 353 days in 2019. Recreational catches have also declined from approximately 17 000 harvested in 2009–10 to 14 000 fish in 2013–14 [Webley et al. 2015]. 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 East Coast Queensland management unit is classified as a **sustainable stock**.

Gulf of Carpentaria In the Gulf of Carpentaria Blue Threadfin is harvested by the Gulf of Carpentaria Inshore Fin Fish Fishery. The commercial catch has been variable since the commencement of compulsory commercial reporting (1989). Record high catches of around 124 t were reported in 1999 and 2004. In 2017 the commercial catch was 48 t which is 11 per cent lower than the previous 10 year (2009–18) catch average [QFISH 2020]. Nominal catch rates of this species fluctuated from about 4 kg per 100 m net in 1988 to 12 kg per 100 m net in 1999. Since 2001, the nominal catch rate from the fishery has been around 8 kg per 100 m net, rising to 10 kg per 100 m net in 2017, the second highest rate of the time series. The catch rate has since stabilised back to 8 kg per 100 m net. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

The species is considered to have a low susceptibility to fishing pressure [Welch et al. 2010] as it is a short-lived and fast-growing species. Fishing pressure has fluctuated with harvest levels but has generally decreased over the recent decade. A peak of 78 active commercial licences and 3 116 days fished occurred in 2004 [QFISH 2020]. In 2019 there were 54 active licences and catch was reported on 1 531 days. Estimated recreational harvest has ranged between 15

and 19 t in recent years [Webley et al. 2015]. 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 Gulf of Carpentaria (Queensland) management unit is classified as a **sustainable stock**.

Northern Territory

Northern Territory. The recreational harvest is significant, at around 40 per cent of the overall harvest of this species [West et al. 2012]. The majority of the recreational take of Blue Threadfin (85 per cent) is captured around the greater Darwin area, within a radius of about 150 km of this population centre [West et al. 2012]. The recreational catch within this region in 2015 was 5.2 t [Matthews et al. 2019]. The spatial distribution of the commercial catch is similar, with some harvest from the northeast coast and the southern Gulf of Carpentaria. There are no estimates of the Indigenous harvest of Blue Threadfin (as a unique species) in the Northern Territory. However, the annual harvest of "Threadfin Salmon" (i.e. 8 565 individual fishes) reported by Henry and Lyle [2003] provides some indication of the scale of the combined harvest of Blue Threadfin and King Threadfin (*Polydactylus macrochir*) by Indigenous fishers in this jurisdiction.

The commercial catch of Blue Threadfin peaked at 26.9 t in 2011. Annual catches in the decade spanning 2010–19 averaged 13.6 t, with the catch in 2019 being 4.3 t. A preliminary assessment using catch data applied to a modified catch-MSY model (developed by Martell and Froese [2013] and modified by Haddon et al. [2018]), suggests that the relative biomass (29.5 t) of Blue Threadfin at in 2019 was above the target biomass (i.e. 50 per cent of 1983 biomass) [Grubert and Saunders, unpublished]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. The same assessment also indicated that the harvest rate in 2019 was just over half of the target rate. 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, Blue Threadfin in the Northern Territory is classified as a

sustainable stock.

Western Australia

Stock status for the Western Australian jurisdictional stock is reported as **negligible** due to historically low levels of catch in this jurisdiction. The stock has generally not been subject to targeted fishing and the species is caught as a byproduct when targeting King Threadfin within the Kimberley Gillnet and Barramundi Managed Fishery (KGBMF). The Western Australian commercial catch has been low and stable for the past six years (2014–19), ranging from 1.2–1.8 t, with a mean annual catch of 1.5 t. The recent catches from 2014–2019 are well below the average of 5.2 t for the 10-year period from 2004–2013. This is due to low effort levels in the fishery [Newman et al. 2020] following the removal of two fishing licenses from the Broome coast area. The Broome coast area has been closed to commercial fishing since late 2013. Blue Threadfin is not a major component of recreational landings although the recreational and charter catch of Blue Threadfin is larger than the commercial catch (~6 t, combined recreational and charter). This catch is low given the large spatial extent of recreational fishing activity. Fishing is unlikely to be having a negative impact on the stock.

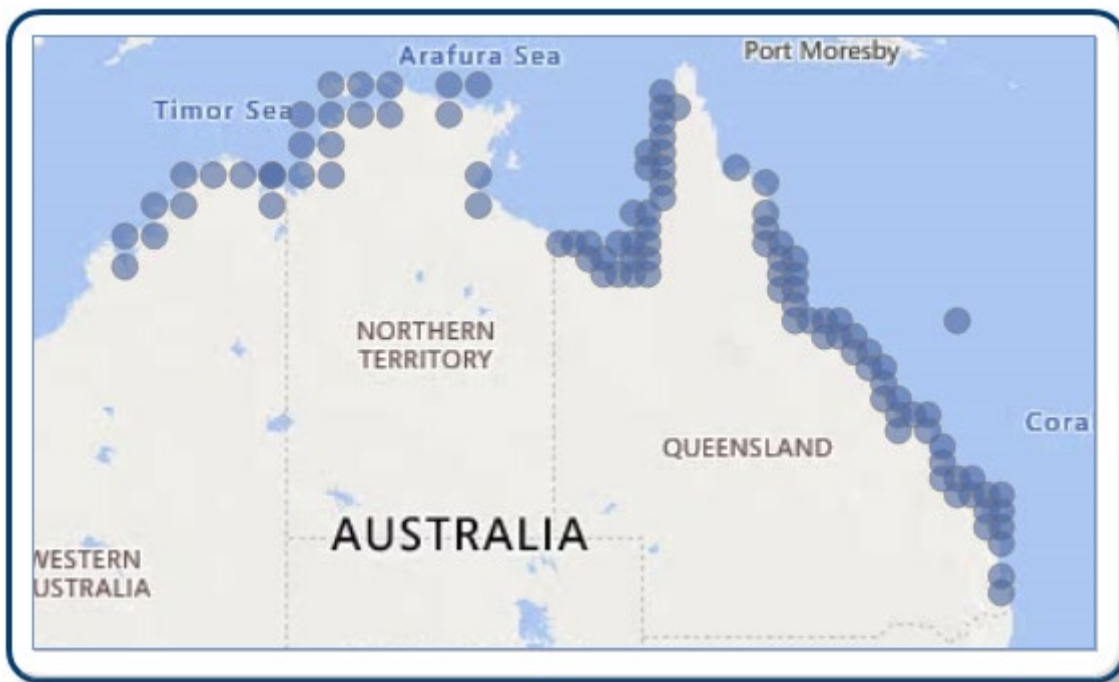
BIOLOGY

Blue Threadfin biology [Stanger 1974, Bibby et al. 1997, McPherson 1997, Pember 2006,

Welch et al. 2010]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Blue Threadfin	7 years, 880 mm FL	Variable on location and year Females: 2 to 4 years, 208–543 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Blue Threadfin - note confidential catch not shown

TABLES

Fishing methods	Northern Territory	Queensland	Western Australia
Charter			
Hook and Line	✓	✓	✓
Commercial			
Beach Seine	✓		
Crab Trap		✓	
Dropline	✓		
Gillnet	✓		✓
Handline	✓		
Line		✓	
Net		✓	
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			
Gear restrictions	✓	✓	✓
Limited entry	✓	✓	✓
Mesh size regulations	✓		
Size limit		✓	
Spatial closures	✓	✓	✓
Spatial zoning	✓	✓	✓
Temporal closures	✓	✓	
Vessel restrictions	✓	✓	✓
Recreational			
Bag limits			✓
Gear restrictions	✓		
Licence (Recreational Fishing from Boat License)			✓
Possession limit	✓	✓	
Size limit		✓	
Spatial closures	✓	✓	✓
Spatial zoning	✓		

Temporal closures	✓		
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Catch	Northern Territory	Queensland	Western Australia
Charter	1.2 t		2 t
Commercial	3.54014 t	93.104 t	1.21835 t
Indigenous	Unknown	Unknown	
Recreational	5.2 t (2015)	19 t Gulf of Carpentaria, 15 t East Coast	4 t (2017/18)

Northern Territory – Charter (management methods) Note Charter operators in the Northern Territory are under the same management methods as the recreational sector but have the additional restrictions of limited licences and passenger numbers.

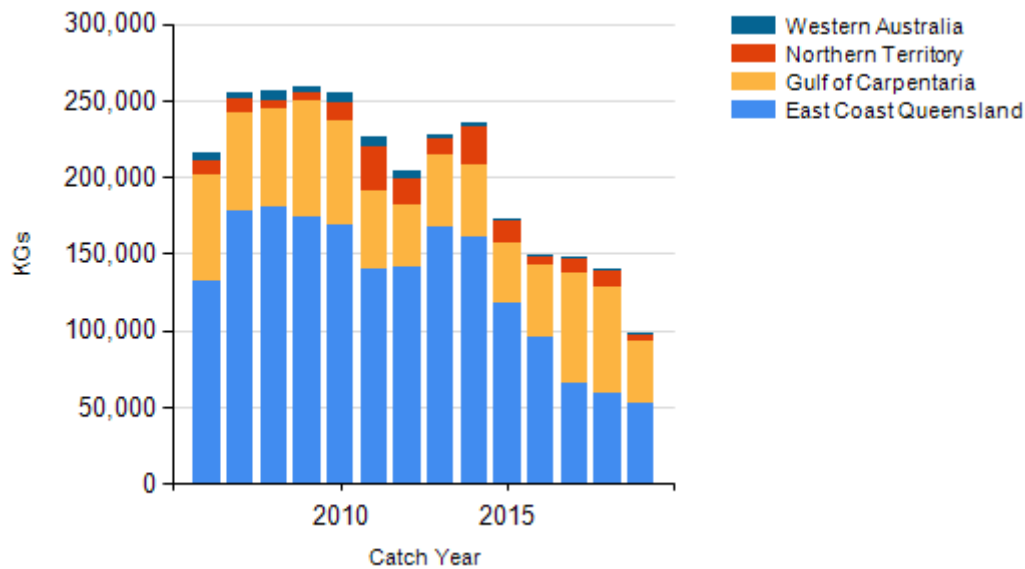
Queensland – Indigenous (management methods) for more information see <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

Western Australia – Recreational (catch) Boat-based recreational catch between 1 September 2015 and 31 August 2016 from Ryan et al. [2019]. Please note that catches of Blue Threadfin are underestimates as shore-based and boat-based fishers that only operated in freshwater were out of scope of the survey.

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.

CATCH CHART



Commercial catch of Blue Threadfin - note confidential catch not shown.

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STATUS OF AUSTRALIAN FISH STOCKS REPORT
Blue Threadfin (2020)

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