

# Blue Threadfin (2018)

*Eleutheronema tetradactylum*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Western Australia	KGBMF	Negligible	Catch
Northern Territory	Northern Territory	ACL, BF, BNF, CLF, CNF, ONLF	Sustainable	Catch, estimated harvest rate
Queensland	East Coast Queensland	ECIFFF	Sustainable	Catch, effort, CPUE
Queensland	Gulf of Carpentaria	GOCIFFF	Sustainable	Catch, effort, CPUE

BF Barramundi Fishery (NT), CLF Coastal Line Fishery (NT), ONLF Offshore Net and Line Fishery (NT), ECIFFF East Coast Inshore Fin Fish Fishery (QLD), GOCIFFF Gulf of Carpentaria Inshore Fin Fish Fishery (QLD), KGBMF Kimberley Gillnet and Barramundi Managed Fishery (WA), ACL Aboriginal Coastal License (NT), BNF Bait Net Fishery (NT), CNF Coastal Net Fishery (NT)

## 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 [Ballagh et al. 2012, Horne et al. 2011, Horne et al. 2012, Horne et al. 2013, Moore et al. 2011, Newman et al. 2011, Welch et al. 2010, Zishke et al. 2009]. 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 [Ballagh et al. 2012, Horne et al. 2011, Horne et al. 2012, Horne et al. 2013, Moore et al. 2011, Newman et al. 2011, Welch et al. 2010, Zishke et

al. 2009]. There is a high likelihood of separate biological stocks occurring in each jurisdiction; however, the boundaries between possible stocks 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.

Catch and catch rates decreased in 2016 and 2017 following the introduction of three new net closure areas in November 2015, along with a buy-back scheme for net licenses. Average annual catch over 2006–15, prior to this management change, for the Net Free Zones was Capricorn Coast 34 t, Trinity Bay 5 t, St Helens 3.2 t [QDAF 2018]. When catches from these Net Free Zones are excluded from the whole time series the average catch for 2016 and 2017 was 61 t compared to the 2006–15 average of 113 t [QDAF 2018].

Commercial un-standardised catch rates rose steeply from 6 to 14 kg per 100 m of net from 1988 to 1994, and 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 6.7 kg per 100 m in 2016 and 2017 respectively, but 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 [Welsh 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]. Fishing pressure has decreased since management changes in 2015, with fewer licences and fishing days, and additional areas protected from commercial harvest. In 2013, a reported 4 368 net fishing days were recorded, declining to 3 352 days in 2017. Recreational catches have also declined from approximately 17 000 harvested in 2009–10 to 14 000 fish in 2012–13 [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 74 t which is 37 per cent higher than the previous 10 year (2007–16) catch average. 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 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 3 111 days fished occurred in 2004. In 2017 there were 56 active licences and catch was reported on 1 714 days. Queensland recreational harvest in 2013–14 was approximately 16 000 fish which is only 25 per cent higher than the estimated harvest during 2010–11 [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

Blue Threadfin is incidentally caught in several inshore fisheries operating across the Northern Territory. The recreational harvest is significant, at around 40 per cent of the overall harvest of this species [NTG unpublished]. The majority of the recreational take of Blue Threadfin (85 per cent) is taken around the greater Darwin area, within a radius of approximately 150 km of this population center [West et al. 2012]. 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 in the Northern Territory. Due to the lack of a long-term time series of recreational and Indigenous catches, the assessment presented here is based on data from commercial logbooks.

The commercial catch of Blue Threadfin peaked at 100 t in 1996. Annual catches in the decade spanning 2008–17 averaged 23 t, with the catch in 2017 being 11.6 t. A preliminary assessment using catch data with a catch-MSY model, modified from Martell and Froese (2013), suggests that the predicted relative biomass (139 t) of Blue Threadfin at the conclusion of 2017 was slightly below the target biomass (i.e. 50 per cent of 1983 biomass). 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 2017 was below the target rate (0.18 per annum). 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 Australia jurisdictional stock is reported as Negligible due to historically low catches in this jurisdiction. The stock has generally not been subject to targeted fishing. The Western Australian commercial catch over the 10 year period from 2008–17 has averaged less than 150 kg per annum [Newman et al. 2018]. 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 (~7 tonnes [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** [Bibby et al. 1997, McPherson 1997, Pember 2006, Stanger 1974, 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**

Commercial Catch Methods	Northern Territory	Queensland	Western Australia
Beach Seine	✓		
Cast Net	✓		
Gillnet	✓	✓	
Hook and Line	✓	✓	
N/A		✓	✓
Pelagic Gillnet	✓		

Fishing methods	Northern Territory	Queensland
<b>Charter</b>		
Handline		✓
<b>Commercial</b>		
Beach Seine	✓	
Cast Net	✓	
Gillnet	✓	✓
Hook and Line	✓	✓
Pelagic Gillnet	✓	
<b>Indigenous</b>		
Handline	✓	✓

Spearfishing	✓	✓
Traps and Pots	✓	✓
<b>Recreational</b>		
Handline	✓	✓
Spearfishing		✓

<b>Management Methods</b>		
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	<b>Northern Territory</b>	<b>Queensland</b>
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<b>Charter</b>		
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Bag and possession limits	✓	✓
Limited entry	✓	
Passenger restrictions	✓	
Size limit		✓
Spatial closures	✓	✓
Spatial zoning		✓

<b>Commercial</b>		
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Gear restrictions	✓	
Limited entry	✓	✓
Size limit		✓
Spatial closures	✓	✓
Spatial zoning	✓	✓
Temporal closures	✓	✓
Vessel restrictions	✓	✓

<b>Recreational</b>		
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Bag and possession limits	✓	✓
Size limit		✓
Spatial closures	✓	✓
Temporal closures	✓	

<b>Active Vessels</b>			
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	<b>Northern Territory</b>	<b>Queensland</b>	<b>Western Australia</b>
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	14 LICENCES in BF, 14 LICENCES in CI F. 7	136 in ECIFFF, 56 in GOCIFFF,	&lt;3 in KGBMF, 27 in Charter,
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	LICENCES in ONLF, 12 LICENCES in ACL, 13 LICENCES in BNF, 3 LICENCES in CNF,		
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**BF** Barramundi Fishery(NT)

**CLF** Coastal Line Fishery(NT)

**ONLF** Offshore Net and Line Fishery(NT)

**ECIFFF** East Coast Inshore Fin Fish Fishery(QLD)

**GOCIFFF** Gulf of Carpentaria Inshore Fin Fish Fishery(QLD)

**KGBMF** Kimberley Gillnet and Barramundi Managed Fishery(WA)

**ACL** Aboriginal Coastal License(NT)

**BNF** Bait Net Fishery(NT)

**CNF** Coastal Net Fishery(NT)

**Charter** Tour Operator(WA)

Catch	Northern Territory	Queensland	Western Australia
<b>Commercial</b>	0.7955t in ACL, 1.50833t in BF, 4.585t in BNF, 0.654667t in CLF, 1.255t in CNF, 0.534t in ONLF,	58t in ECIFFF, 74.379t in GOCIFFF,	
<b>Indigenous</b>	Unknown	Unknown	
<b>Recreational</b>	7.806 t	19 t +/- 9 t Gulf of Carpentaria, 15 t +/- 7 t East Coast	

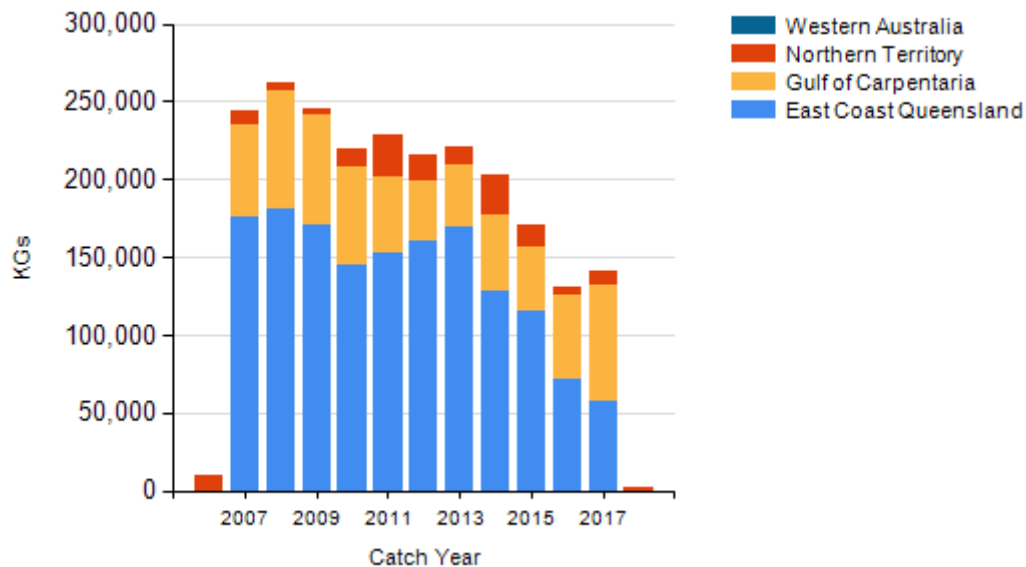
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**Northern Territory – Charter (management methods)** Note Charter operators in the Northern Territory are under the same management methods as the recreational sector but have the additional restrictions of limited licences and passenger numbers.

**Queensland – Indigenous (management methods)** In Queensland, under the *Fisheries Act* 1994 (Qld), Indigenous fishers are able to use prescribed traditional and non-commercial fishing apparatus in waters open to fishing. Size and bag limits and seasonal closures do not apply to Indigenous fishers. Further exemptions to fishery regulations can be obtained through permits.

**Queensland – Recreational (including some charter and Indigenous fishers)** Survey of Queensland residents only from August 2013 to October 2014 [Webley et al. 2015]

## CATCH CHART



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

## EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

### ENVIRONMENTAL EFFECTS on Blue Threadfin

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