

Redthroat Emperor (2018)

Lethrinus miniatus



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Western Australia	GDSMF, GDSMF PTMF WCDGDLIMF WCDSIMF, PTMF, WCDGDLIMF, WCDSIMF	Recovering	Catch, effort
Queensland	East Coast Queensland	CRFFF	Sustainable	Catch, standardised catch rate, stock assessment

LFR Line Fishery (Reef) (QLD), GDSMF Gascoyne Demersal Scalefish Managed Fishery (WA), PTMF Pilbara Trap Managed Fishery (WA), WCDGDLIMF West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WA), WCDSIMF West Coast Demersal Scalefish (Interim) Managed Fishery (WA), GDSMF || PTMF || WCDGDLIMF || WCDSIMF Various Fisheries combined due to 3 boat rule (WA)

STOCK STRUCTURE

Genetic analysis indicates that there are two separate biological stocks of Redthroat Emperor in western and eastern Australian waters [Van Herwerden et al. 2009].

Here, assessment of stock status is presented at the biological stock level—Western Australia and East Coast Queensland.

STOCK STATUS

East Coast Queensland The most recent assessment (2006) of East Coast Queensland Redthroat Emperor used an integrated age-structured model that incorporated all available information on catch, catch per unit effort and age structure [Leigh et al. 2006]. The model estimated that biomass in 2004 was approximately 70 per cent of the unfished levels of 1946. The stock assessment estimated the maximum sustainable yield to be in the range of 760–964 t per year. After significant management changes in 2004 including increased minimum landing size, introduction of a commercial catch quota and reduced recreational bag limits, the annual commercial catch has seen a stable reduction, with 2017 recording the lowest historical catch of 137 t [QDAF 2018]. The most recent recreational

fishing survey (2013–14) estimated a total harvest of 49 t in 2014 [Webley et al. 2015], with the charter sector harvesting 83 t in 2016–17 [QDAF 2018]. The combined catch is well below the estimated maximum sustainable yield. The above evidence indicates that the biomass of the stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Harvests since 2004–05 have been well below the maximum sustainable yield estimate, with both total catch and standardised commercial catch rates remaining stable since then [QDAF 2018]. 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 biological stock is classified as a **sustainable stock**.

Western Australia

A separate stock assessment of Western Australia Redthroat Emperor has not been conducted. Status of Western Australia Redthroat Emperor is inferred from assessments of a number of key indicator species considered to provide reliable indices of the fishing pressure on the entire suite of demersal species in this fishery. Indicator species were selected based on a range of factors, including inherent vulnerability, social/economic importance and management requirements [Newman et al. 2018]. Regular key indicator species assessments focus on West Australian Dhufish and Snapper, with aperiodic assessments of the other indicator species.

In 2007, an assessment of three indicator species (West Australian Dhufish, Snapper and Baldchin Groper) in the Western Australian management unit where Redthroat Emperor is exploited primarily identified that overfishing had been occurring, with fishing mortality rates (F) exceeding the limit reference point of 1.5 times the natural mortality rates (M) for those species [Wise et al. 2007]. The above evidence indicates that the biomass of the Western Australian biological stock of Redthroat Emperor is likely to be depleted and that recruitment is likely to be impaired.

Management arrangements for both the commercial and recreational sectors were introduced between 2007 and 2010 to recover stocks of all demersal species (including the Western Australian biological stock of Redthroat Emperor) in that management unit. These arrangements were designed to reduce effort to ensure annual retained catches of the demersal suite do not exceed 50 per cent of 2005–06 levels (i.e. < 450 tonnes [t] commercial and 250 t recreational). This recovery strategy is designed to reduce F to less than the threshold reference point ($F=M$) and increase spawning potential ratio (SPR) above the threshold (30 per cent of the pre-fishing level).

Commercial and recreational catches of the demersal suite of species have remained around or below 50 per cent of 2005–06 catches (the stock recovery benchmark) since management changes were introduced [Fairclough et al. 2018]. Following three years of commercial catches of one key indicator species (Snapper) being above its 50 per cent of 2005–06 catch level, further changes were introduced in 2015 to reduce effort and catches in the commercial fishery. This reduced commercial catches below the stock recovery benchmark [Fairclough et al. 2018]. Under the current management arrangements, commercial catches of Redthroat Emperor have remained below 50 per cent of 2005–06 levels (95 t) since 2009, i.e. 48–65 t. Annual recreational and charter catches are small (11 t) [Gaughan and Santoro, 2018, Ryan et al. 2017]. F and SPR for fully-recruited age classes of the key demersal indicator species in the most recent assessment (age frequency data for 2012–14) remained above and below their respective limit reference points. Additional analyses using a method which takes into account a change in fishing mortality following management intervention [Fisher 2013] identified a decrease in fishing mortality for cohorts recruited to the fishery since management changes commenced in 2008, compared with those that had recruited prior to these changes. This was

identified for both indicator species, i.e. West Australian Dhufish $F = 0.13$ vs 0.21 and Snapper $F = 0.14$ vs 0.27 [cf. Fairclough et al. 2014; Department of Primary Industries and Regional Development, unpublished data]. This indicated that recent fishing mortality rates for the period 2008–17 were between limit and threshold reference points and thus, given recent lower catches, would have also decreased for the Western Australia biological stock of Redthroat Emperor, suggesting a recovering stock.

The above evidence indicates that the current level of fishing mortality should allow the stock to recover from its recruitment impaired state.

On the basis of the evidence provided above, the Western Australia biological stock is classified as a **recovering stock**.

BIOLOGY

Redthroat Emperor biology [VanHerwerden et al. 2009, Williams 2003, Williams et al. 2003]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Redthroat Emperor	20 years, 650 mm TL	Females: 1.2 years, 280 mm FL, 310 mm TL

DISTRIBUTION



Distribution of reported commercial catch of Redthroat Emperor

TABLES

Commercial Catch Methods	Queensland	Western Australia
Dropline		✓
Fish Trap		✓
Gillnet		✓
Hand Line, Hand Reel or Powered Reels		✓

Hook and Line	✓	✓
Longline (Unspecified)		✓
Traps and Pots		✓
Unspecified		✓

Fishing methods		
	Queensland	Western Australia
Charter		
Hook and Line	✓	✓
Spearfishing		✓
Commercial		
Dropline		✓
Fish Trap		✓
Gillnet		✓
Hand Line, Hand Reel or Powered Reels		✓
Hook and Line	✓	✓
Unspecified		✓
Indigenous		
Hook and Line	✓	✓
Spearfishing	✓	✓
Recreational		
Hook and Line	✓	✓
Spearfishing	✓	✓

Management Methods		
	Queensland	Western Australia
Charter		
Bag limits		✓
Catch limits	✓	
Gear restrictions	✓	✓
Licence		✓
Limited entry	✓	
Marine park closures		✓
Passenger restrictions		✓
Possession limit		✓
Size limit	✓	✓

Spatial closures	✓	
Spatial zoning		✓
Temporal closures	✓	✓
Commercial		
Catch restrictions	✓	
Effort limits		✓
Gear restrictions	✓	✓
Limited entry	✓	✓
Size limit	✓	✓
Spatial closures	✓	✓
Spatial zoning		✓
Temporal closures	✓	
Total allowable effort		✓
Vessel restrictions	✓	✓
Indigenous		
Gear restrictions		✓
Size limit		✓
Spatial closures		✓
Temporal closures		✓
Recreational		
Bag and possession limits		✓
Bag limits		✓
Catch limits	✓	
Gear restrictions	✓	✓
Licence (boat-based sector)		✓
Limited entry	✓	
Marine park closures		✓
Size limit	✓	✓
Spatial closures	✓	
Spatial zoning		✓
Temporal	✓	✓

closures		
Active Vessels	Queensland	Western Australia
	158 in CRFFF,	12 in GDSMF, <3 in PTMF, <3 in WCDGDLIMF, 31 in WCDSIMF, 44 in Charter,

LFR Line Fishery (Reef)(QLD)

GDSMF Gascoyne Demersal Scalefish Managed Fishery(WA)

PTMF Pilbara Trap Managed Fishery(WA)

WCDGDLIMF West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery(WA)

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

Charter Tour Operator(WA)

Catch	Queensland	Western Australia
Charter		5 t (2015–16)
Commercial	137.053t in CRFFF,	53.0953t in GDSMF PTMF WCDGDLIMF WCDSIMF,
Indigenous	Unknown	Unknown
Recreational	49 t (in 2013)	6 t (± 1.1 se) (2015–16)

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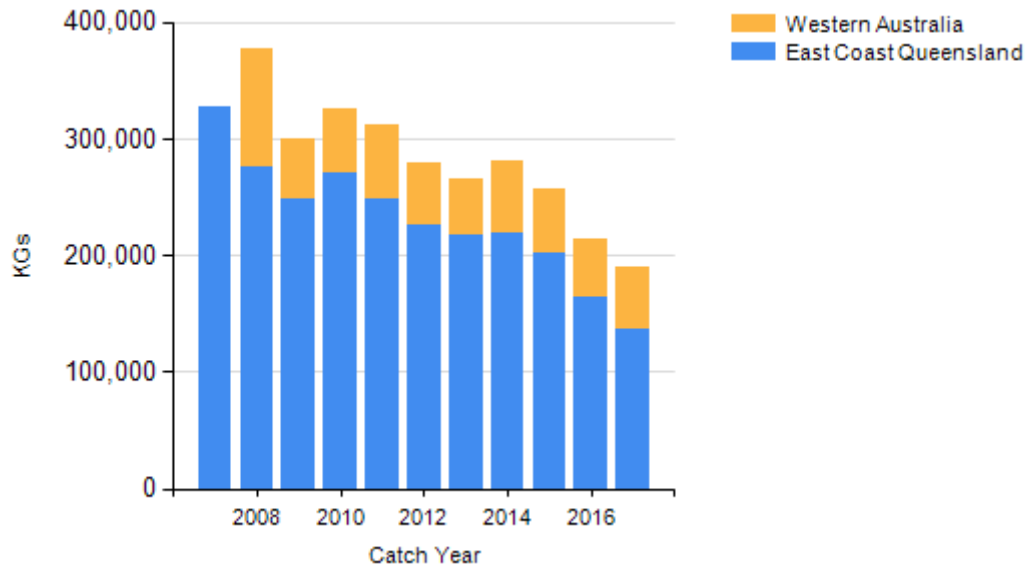
Western Australia Data for Western Australia align with the 2017 calendar year.

Queensland Data for Queensland align with the 2016–17 financial year.

Queensland – Indigenous (management methods) 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.

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.

CATCH CHART



Commercial catch of Redthroat Emperor - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Redthroat Emperor

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