

Red Emperor (2023)

Lutjanus sebae



Stephen Newman: Department of Primary Industries and Regional Development, Western Australia, **Michael Usher:** Department of Industry, Tourism and Trade, Northern Territory, **Fabian Trinnie:** Department of Primary Industries and Regional Development, Western Australia, **Corey Wakefield:** Department of Primary Industries and Regional Development, Western Australia, **Amos Mapleston:** Department of Agriculture and Fisheries, Queensland

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Gascoyne	Sustainable	Catch, indicator species status
Western Australia	Kimberley	Sustainable	Spawning stock level, age structure, catch, CPUE
Western Australia	Pilbara	Sustainable	Spawning stock level, age structure, catch, CPUE
Northern Territory	Arafura Sea	Sustainable	Biomass, catch
Northern Territory	Joseph Bonaparte Gulf	Sustainable	Biomass, catch
Northern Territory	Timor Sea	Sustainable	Biomass, catch, fishing mortality
Northern Territory, Queensland	Gulf of Carpentaria	Sustainable	Biomass, catch
Queensland	East Coast Queensland	Sustainable	Biomass, stock assessment

STOCK STRUCTURE

Red Emperor is widely distributed throughout the Western Pacific and Indian Oceans, ranging from western and eastern Australia to southern Japan, and westward to east Africa and the southern Red Sea (Allen 1985). Within Australia, Red Emperor range from Cape Naturaliste

(33°30' S) in Western Australia, north and east across northern Australia and down the east coast to Sydney in New South Wales. Red Emperor in Western Australia is exploited primarily in the North Coast Bioregion [Newman et al. 2020]. Smaller catches are taken in the Northern Territory and Queensland. Red Emperor is one of the indicator species used to assess the status of the demersal resources in the North Coast Bioregion [Newman et al. 2018].

van Herwerden et al. [2009] examined the genetic connectivity of Red Emperor using mitochondrial DNA from samples collected at two locations in Western Australia (Browse Island, Kimberley region; Montebello Islands, Pilbara region) and two locations on the east coast (High Peak Island and Catfish Shoal, East Coast Queensland). The mitochondrial DNA data for Red Emperor did not differ genetically either within or between coasts at the locations examined, suggesting a panmictic population structure with high levels of gene flow among populations. This study indicates that eastern and western Australian populations of Red Emperor form a single inter-breeding genetic stock [van Herwerden et al. 2009] or one biological stock. The results of van Herwerden et al. [2009] confirm those derived by Johnson et al. [1993] using allozymes for Red Emperor in Western Australian waters. Johnson et al. [1993] examined allozyme samples of Red Emperor from the Lacepede Islands, Bedout island, Lowendal Islands, Ningaloo and Shark Bay. This study reported extensive connectivity and gene flow among populations throughout the sampled range of 1,400 km in Western Australia.

Stephenson et al. [2001] examined stable isotopes in sagittal otolith carbonates of Red Emperor from four locations; Shark Bay (Gascoyne), Ningaloo (Gascoyne), Pilbara and Broome (Kimberley). Significant differences in stable isotope ratios provided evidence that there was limited mixing of adult Red Emperor between three broad zones; Shark Bay (Gascoyne), Pilbara, and Broome (Kimberley), a distance of approximately 1,400 km [Stephenson et al. 2001]. Therefore, these broad locations could be managed separately for the purposes of fishery management, if management arrangements were established to harmonise with the spatial patterns of exploitation. Stephenson et al. [2001] reported partial mixing of Red Emperor from Pilbara west and east sites. The overlap in the multivariate analyses of otolith stable isotope signatures between some sites potentially reflects dispersal by a proportion of juvenile or adult fish. This suggests that, in Western Australia, Red Emperor can be managed as a number of separate management units. Additionally, Saunders et al. [2018] used otolith microchemistry and parasitology to identify separate biological Red Emperor stocks in the Joseph Bonaparte Gulf, Timor Sea, Arafura Sea and Gulf of Carpentaria.

Here, assessment of stock status is presented at the management unit level — Gascoyne, Pilbara and Kimberley (Western Australia) and East coast (Queensland); and at the biological stock level for the Joseph Bonaparte Gulf, Timor Sea, Arafura Sea and Gulf of Carpentaria.

STOCK STATUS

Arafura Sea Red Emperor were initially harvested by the foreign trawl fleet operating in this region in the 1970s and 1980s with a peak catch of 69 tonnes (t) recorded in 1989. In 1991 this fleet left Northern Territory (NT) waters and only small catches were recorded by trap and line gear in the Demersal Fishery (DF). From 1995 a single trawl vessel in the fishery resulted in a slight increase in catch which was further increased when three additional trawlers commenced fishing in 2012. Catch in the last 10 years (2012–13 to 2021–22) has ranged from 19 to 46 t, at an annual average of 32 t.

A fishery independent survey was undertaken in 2021 to estimate the relative biomass of key species in the Timor Reef Fishery (TRF) and DF, including Red Emperor. As a result of this work the biomass of Red Emperor in the NT was estimated to be 2,670 t, with a coefficient of variation of 0.17. Within this, the biomass of Red Emperor in the Arafura Sea stock was estimated to be 1,102 t [Knuckey and Koopman 2022]. The commercial harvest in this stock has averaged 32 t in the last 10 years, which is 2.9% of the estimated

biomass. It is important to note that the survey was designed to obtain a time-series of consistent and robust relative abundance indices that and due to uncertainties around assumptions of catchability, herding and escapement, this one-off estimate of absolute abundance should be used with caution [Knuckey and Koopman 2022]. Regardless, this estimate of biomass can assist in understanding the impact fishing has on this stock, with the low level of catch indicating the stock is unlikely to be depleted and the resultant low level of fishing mortality is unlikely to result in the stock becoming recruitment impaired.

On the basis of the evidence provided above, Red Emperor in the Arafura Sea biological stock is classified as a **sustainable stock**.

East Coast Queensland

Red Emperor is mainly caught by hook and line with the majority harvested within the Great Barrier Reef Marine Park (GBRMP) The first east coast Red Emperor stock assessment was completed in 2022 and indicated biomass levels have remained at between 55 to 60% since 2005 [Sumpter et al 2022]. Stock biomass in 2021 was estimated at 58% of unfished levels, with the assessment providing a range of estimates across scenarios from 56–65%. Red Emperor is regionally important to recreational fishers, and it is regarded as a trophy fish. In the 2019–20 survey, the annual recreational Red Emperor harvest was estimated at 58 t; down from 74 t in the 2013–14 [Teixeira et al. 2021]. This equates to around 64% per cent of the total Red Emperor landed on the Queensland east coast in 2019-20. The five-year harvest average for the charter fishery was 13 t.

In the commercial fishery, reported harvests declined from 100–200 t per year (1998–99 to 2003–04) to less than 61 t per year. This decrease coincided with the expansion of no-take marine reserves in the GBRMP and the introduction of a quota management system for the Reef Line Fishery (RLF). A portion of the biomass is afforded soem protection from fishing by zoning in the GBRMP although this has not been quantified. Over the last decade, annual commercial catches have shown a general decline from 61 t (2009–10) to 31t (2021–22). Over this same period, the number of vessels landing Red Emperor within the RLF reduced from 210 (2009–10) to 173 (2017–21 average).

Red Emperor is a secondary target and by-product species in the Reef Line Fishery. Commercial harvest in this fishery is constrained by a multi-species total allowable commercial catch (TACC). The long-term management of the species is also guided by the Reef Line Fishery Harvest Strategy: 2020–2025 [QDAF 2020]. The strategy includes species-specific harvest control rules and catch reference points for secondary target species to control fishing pressure and effort shifts. For instance, if the east coast Red Emperor harvest exceeds catch reference points, control rules will trigger an interim species specific TACC [QDAF 2020].

Recreational harvest is controlled through the minimum legal size and an individual possession limit ($n = 5$). The Indigenous catch is unknown but is expected to be minor.

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

Gascoyne

Red Emperor in the Gascoyne are caught by commercial line fishers in the Gascoyne Demersal Scalefish Managed Fishery and the recreational/charter sectors. Red Emperor is assessed based on the status of the indicator species, particularly Goldband Snapper, for the Gascoyne Demersal Scalefish Resource

(GDSR), that are representative of the inshore demersal species occurring at depths of 30–250 m [Newman et al. 2018]. The inshore demersal indicator species in the Gascoyne have been classified as sustainable. The level of risk associated with the sustainability of Red Emperor in the GDSR is assessed as low. This assessment of Red Emperor is supported by the results of a data-limited Catch-MSY assessment, where recent catches were compared to median model predictions for maximum sustainable yield (MSY).

Total catches of Red Emperor in the Gascoyne over the last 10 years (2013–22) have ranged from 21–38 t (mean annual catch 30 t). This represents a moderate decline in the total catch compared to the previous 10 years (mean annual catch 38 t). The combined recreational and charter catch has been comparable to the commercial catch over the past 10 years, averaging approximately 55% of the total catch. Analyses using a Catch-MSY model applied to annual catches for this species (1976–2022), demonstrated that the annual catches began below the median model prediction for MSY but increased above the upper 95% CI of MSY from 1986–89, then fluctuated within the MSY range, then increased above the 95% CI from 1998–2007, but have since fluctuated around MSY. This is also consistent with the predicted values for biomass declining below BMSY (0.5) in 2004 and having remained between 25% BMSY and BMSY for the remainder of the time series. Fishing mortality has been above FMSY since 2006 but was below in 2022. However, it is important to recognise that Catch-MSY is a data-limited technique with relatively strong assumptions, dependent on user inputs. For this assessment, assumptions included specified ranges for initial depletion (0.5–0.975), based on likely catch prior to the start of the time series, final depletion (0.05–0.5), based on recent catches relative to maximum recorded annual catch, and low resilience ($r=0.1–0.6$, consistent with species longevity, of approximately 41 years in WA). Given recent catches of this species being around the predicted MSY, and the status of the indicator species for the GDSR, it is considered unlikely that the biomass of Red Emperor in the Gascoyne is depleted.

Based on the evidence provided above, the Gascoyne (Western Australia) management unit is classified as a **sustainable stock**.

Gulf of Carpentaria

Red Emperor in this stock has historically been taken by demersal fish trawl in the Gulf of Carpentaria Developmental Fin Fish Trawl Fishery (GOCDFTF) and Northern Territory Demersal Fishery (DF). This stock was also exposed to historical fishing from foreign fleets during the 1950s to the 1980s [O'Neill et al. 2011].

There are limited estimates of recreational or Indigenous harvest of Red Emperor in the Gulf of Carpentaria, but it is expected to be minor given the offshore nature of the fishery. Recreational catch of Red Emperor in the Northern Territory was estimated to be < 0.5 t in 2018–19 [West et al. 2022]. There has been a small amount of charter catch in Queensland, with catches increasing and averaging 5t from 2006–07 to 2010–11. Catches declined and no charter catch has been reported since 2017–18. The Northern Territory charter catch in the Gulf of Carpentaria has average less than 100 fish per year for the last ten years.

Commercial catches peaked during the 1970s at approximately 30 t and are only slightly higher than the 2008 peak (23 t). The GOCDFTF is responsible for the majority of the post-2000 Gulf of Carpentaria Red Emperor harvest. However, harvest rates in this fishery declined markedly over the post-2012 period and no Red Emperor was reported from the fishery from 2016–17 to 2019–20.

STATUS OF AUSTRALIAN FISH STOCKS REPORT
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Commercial fishing in the GOCDFFTF resumed from 2020-21 with the fishery registering annual harvests of < 4 t. These catch totals are well below the 21 t Red Emperor TACC set for the fishery. Northern Territory commercial catch of Red Emperor in the Gulf of Carpentaria has ranged from < 0.5 to 7.6 t, at an annual average of 2.9 t, for the last 10 years (2012–13 to 2021–22).

Red Emperor harvests in the GOCDFFTF is managed under a combined 450 t Total Allowable Commercial Catch (TACC). This limit was introduced in 2015 and represented a considerable reduction from the previous combined 1,250 t TACC [O’Neil et al. 2011; Leigh and O’Niell 2016]. For reference and context, fishery independent surveys provided a relative biomass estimate for Red Emperor in the GOCDFFTF [Knuckey et al. 2022].

A fishery independent survey was undertaken in 2021 to estimate the relative biomass of key species in the TRF and DF, including Red Emperor. As a result of this work the biomass of Red Emperor in the NT was estimated to be 2,670 t, with a coefficient of variation of 0.17. Within this, the biomass of Red Emperor in the Northern Territory portion of the Gulf of Carpentaria stock was estimated to be 1,127 t [Knuckey and Koopman 2022]. NT commercial harvest in this stock has averaged < 3 t in the last 10 years, which is less than 0.3% of the estimated relative biomass. It is important to note that the survey was designed to obtain a time-series of consistent and robust relative abundance indices that and due to uncertainties around assumptions of catchability, herding and escapement, this one-off estimate of absolute abundance should be used with caution [Knuckey and Koopman 2022]. Regardless, the low level of catch indicates the stock is unlikely to be depleted and the level of fishing mortality is unlikely to result in the stock becoming recruitment impaired.

On the basis of the evidence provided above, Red Emperor in the Gulf of Carpentaria biological stock is classified as a **sustainable stock**.

**Joseph
Bonaparte
Gulf**

Harvest from this stock was first reported in 1985, and the average catch from trap and line vessels in the Demersal Fishery (DF) to 2011 was very small (average < 1 t) compared to the adjacent Timor Sea stock. From 2012 a trawler entered the fishery and catches increased to a peak of 16 t in 2018–19. Commercial catch in 2021–22 was 4.3 t and recreational catch in this stock is limited, estimated at 1,452 fish (\pm 974) in 2017 [Errity et al. 2022]. A fishery independent survey was undertaken in 2021 to estimate the relative biomass of key species in the TRF and DF, including Red Emperor. As a result of this work the biomass of Red Emperor in the NT was estimated to be 2,670 t, with a coefficient of variation of 0.17. Within this, the biomass of Red Emperor in the Joseph Bonaparte Gulf stock was estimated to be 208 t [Knuckey and Koopman 2022]. The commercial harvest in this stock has averaged 9.9 t in the last 10 years (2012–13 to 2021–22), which is 4.8% of the estimated biomass. It is important to note that the survey was designed to obtain a time-series of consistent and robust relative abundance indices that and due to uncertainties around assumptions of catchability, herding and escapement, this one-off estimate of absolute abundance should be used with caution [Knuckey and Koopman 2022]. Regardless, the low level of catch indicates the stock is unlikely to be depleted and the level of fishing mortality is unlikely to result in the stock becoming recruitment impaired.

Based on the evidence above, the Joseph Bonaparte biological stock is classified as a **sustainable stock**.

Kimberley Red Emperor is one of the indicator species in the Kimberley management unit of the North Coast Bioregion of Western Australia [Newman et al. 2018] and as such the stock status of Red Emperor contributes to determining the risk-level for the biological sustainability of the demersal scalefish resources in the Kimberley management unit. Red Emperor is landed commercially in the Northern Demersal Scalefish Managed Fishery (NDSMF). The major performance measures for the Kimberley management unit of Red Emperor are periodic assessments of spawning stock levels and fishing mortality estimated using an integrated age-structured model relative to standard reference levels and fishing mortality from catch curve analysis derived from representative samples of the age structure. Catch, effort and/or catch rates for the indicator species/fishing sector are also reviewed annually, to determine whether they are consistent with current harvest control rules (HCRs) for the resource [DPIRD 2017]. An assessment was undertaken in 2018 and included age composition collected during fisheries independent sampling in 2016–17.

The spawning biomass level of Red Emperor was estimated to be approximately 30% in the NDSMF in 2017 [Wakefield et al. 2023]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. The fishing mortality-based assessments indicated that the fishing level on Red Emperor is at or below the limit level ($F=3/2M$) in 2017 [Wakefield et al. 2023]. This indicates that fishing is not having an unacceptable impact on the age structure of the population. The 2018 assessment resulted in a medium risk to the stock over the next 5 years.

Total catch of Red Emperor in the Kimberley over the last 10 years (2013–22) have ranged from 132–194 t, with a mean annual catch of 147 t. This is consistent with the averages catches across the previous 10 years of 155 t. Recreational and charter catch are very low compared to the commercial catch, in the past 10 years where reliable catches estimates are available, the proportion of the total catch has averaged < 1%. Since 2017, fisheries-dependent catch rates have remained stable with no evidence of a marked decline. The above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

Based on the evidence provided above, the Kimberley (Western Australia) management unit is classified as a **sustainable stock**.

Pilbara Red Emperor is one of the indicator species used to assess the status of the demersal scalefish resources in the Pilbara subregion of the North Coast Bioregion of Western Australia [Newman et al. 2018]. Red Emperor is landed commercially in the Pilbara Trap Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery, and the Pilbara Line Fishery. The major performance measures for the Pilbara management unit of Red Emperor are periodic assessments of spawning stock levels and fishing mortality estimated using an integrated age-structured model relative to standard reference levels and fishing mortality from catch curve analysis derived from representative samples of the age structure. Catch, effort and/or catch rates for the indicator species/fishing sector are also reviewed annually, to determine whether they are consistent with current harvest control rules (HCRs) for the resource [DPIRD 2017]. An assessment was undertaken in 2020 and included a representative age composition collected during fishery dependent sampling in 2019.

Estimates of the relative spawning biomass for the overall stock have fluctuated above threshold levels in the Pilbara Demersal Scalefish Fisheries since the mid-

1980s, they dropped below threshold levels in about 2006, and based on the 2020 assessment had increased to about the threshold level [Wakefield et al. 2023]. All scenarios evaluated in the assessment model indicated that there is a high probability that the estimate of spawning biomass of Red Emperor is around the threshold level in 2019. This indicates that fishing was having an impact on the age structure of the population.

Total catch of Red Emperor in the Pilbara over the last 10 years (2013–22) has ranged from 114–230 t, with a mean annual catch of 172 t. This is comparable to the average catches across the previous 10 years of 176 t. Recreational and charter catch are relatively low compared to the commercial catch, in the past 10 years where reliable catches estimates are available, the proportion of the total catch has averaged approximately 7%. Trawl effort was reduced in 2009 as part of a stock rebuilding strategy, which resulted in stabilising the total retained catches of Red Emperor in the Pilbara Demersal Scalefish Fisheries at about 127 t per year from 2009 to 2015. These commercial catches increased from 2015 to a peak of 215 t in 2019 but have dropped back to previous levels in the last two years. Adjusted catch rates of Red Emperor from the commercial trawl fishery have followed a similar trend, generally increasing from 2014 to 2019, before declining over the last three years. On the basis of the most recent assessment in 2020, the spawning biomass was estimated to be at the threshold level (BMSY) and thus classified as sustainable [Wakefield et al. 2023]. Since that assessment catch rates have shown a declining trend, thus increasing the level of uncertainty regarding current spawning biomass levels.

Based on the evidence provided above, the Pilbara (Western Australia) management unit is classified as a **sustainable stock**.

Timor Sea

Red Emperor harvest in this stock began in 1988, and quickly peaked at just over 100 t in 1991 as the TRF quickly developed. Targeting shifted to the more abundant Goldband Snapper, and only small annual catches (average < 10t) were reported from 1994 to 1999. Thereafter, the trap effort in the TRF and DF increased substantially and catches of Red Emperor have ranged between 19 and 46 t in the last 10 years (2012–13 to 2021–22).

A fishery independent survey was undertaken in 2021 to estimate relative biomass of key species in the TRF and DF including Red Emperor. As a result of this work, the biomass of Red Emperor in the NT was estimated to be 2,670 t, with a coefficient of variation of 0.17. Within this, the biomass of Red Emperor in the Timor Sea stock was estimated to be 247 t [Knuckey and Koopman 2022]. The commercial harvest in this stock has averaged 33 t in the last 10 years, which is 13% of the estimated relative biomass. It is important to note that the survey was designed to obtain a time-series of consistent and robust relative abundance indices that and due to uncertainties around assumptions of catchability, herding and escapement, this one-off estimate of absolute abundance should be used with caution [Knuckey and Koopman 2022].

The stock was assessed in 2019 using catch data from all commercial fisheries applied to a modified catch-MSY model (developed by Martell and Froese [2013] and modified by Haddon et al. [2018]). The results inferred that biomass was in excess of the target reference point, with the mean estimated biomass exceeding the target and 95% confidence intervals positioned above the limit reference point [Saunders 2020]. This indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Similarly, the fishing mortality rate in 2019 was 0.07, which was well below the limit reference point indicating that the current level of fishing mortality is unlikely to

cause the stock to become recruitment impaired.

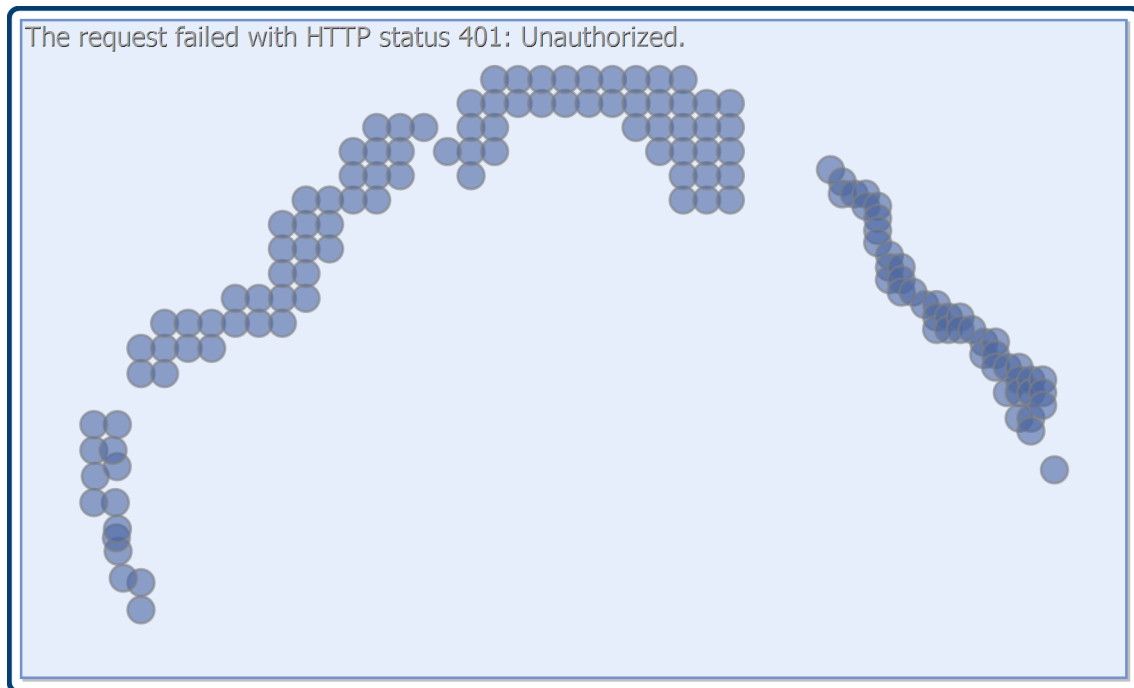
On the basis of the evidence provided above, Red Emperor in the Timor Sea biological stock is classified as a **sustainable stock**.

BIOLOGY

Red Emperor biology [McPherson et al. 1992; McPherson and Squire 1992; Newman et al. 2000, 2001; Newman and Dunk 2002; Newman et al. 2010; O'Neill et al. 2011; Sumpter et al. 2022]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Red Emperor	WA: 40–45 years, 800 mm FL (860 mm TL). East coast Queensland: 43 years, at least 100 mm TL	WA: 4–6 years, 430–460 mm FL (460–490 mm TL). East Coast Queensland: 5 years, 542 mm FL for females

DISTRIBUTION



Distribution of reported commercial catch of Red Emperor.

TABLES

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Red Emperor (2023)

Fishing methods			
	Northern Territory	Queensland	Western Australia
Charter			
Hook and Line	✓	✓	✓
Rod and reel			✓
Spearfishing		✓	✓
Commercial			
Bottom Trawls	✓		
Dropline			✓
Fish Trap	✓		✓
Hand Line, Hand Reel or Powered Reels			✓
Handline	✓		
Line		✓	
Midwater Trawl		✓	
Otter Trawl			✓
Unspecified	✓		
Recreational			
Hook and Line	✓	✓	✓
Spearfishing		✓	✓

Management Methods			
	Northern Territory	Queensland	Western Australia
Charter			
Bag limits			✓
Bag/possession limits		✓	
Gear restrictions	✓	✓	
Limited entry	✓		✓
Passenger restrictions			✓
Possession limit	✓		

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Red Emperor (2023)

Seasonal or spatial closures		✓	
Size limit			✓
Size limits		✓	
Spatial closures	✓		✓
Spatial zoning			✓
Vessel limits	✓		
Commercial			
Bag/possession limits		✓	
Effort limits			✓
Gear restrictions	✓	✓	✓
Harvest Strategy		✓	
Individual transferable quota		✓	
Limited entry		✓	✓
Seasonal or spatial closures		✓	
Size limit			✓
Size limits		✓	
Spatial closures	✓		✓
Spatial zoning			✓
Total allowable catch	✓	✓	✓
Total allowable effort			✓
Vessel restrictions		✓	✓
Recreational			
Bag limits			✓
Bag/possession limits		✓	
Gear restrictions	✓	✓	

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Red Emperor (2023)

Licence (Recreational Fishing from Boat License)			✓
Possession limit	✓		✓
Seasonal or spatial closures		✓	
Size limit			✓
Size limits		✓	
Spatial closures	✓		✓

Catch			
	Northern Territory	Queensland	Western Australia
Charter	0.6 t	12 t	8.79 t
Commercial	80.1778 t	31.3917 t	357.884 t
Indigenous	Unknown	Unknown	Unknown
Recreational	4,555 fish ± 974 se (2018–19)	58 t (2019–20)	19.5 t ± 5.5 t se

Western Australia. Active Vessels data are confidential as there were fewer than three vessels in the Pilbara Fish Trawl Interim Managed Fishery, the Pilbara Trap Managed Fishery and the West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery.

Western Australia – Commercial (Management Methods). Red Emperor forms part of the combined Total Allowable Commercial Catch for other mixed demersal species in the Gascoyne Demersal Scalefish Managed Fishery.

Western Australia – Recreational (Catch). Boat-based recreational catch is from 1 September 2020–31 August 2021. These data are derived from those reported in Ryan et al. 2022.

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.

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: “Unless expressly provided otherwise, nothing in this Act derogates or limits the right of Aboriginal people who have traditionally used the resources of an area of land or water in a traditional manner to continue to use those resources in that area in that manner.”

Queensland – Commercial (Catch). Queensland commercial and charter data have been sourced from the commercial fisheries logbook program. Further information is available through the Queensland Fisheries Summary Report (<https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report>)

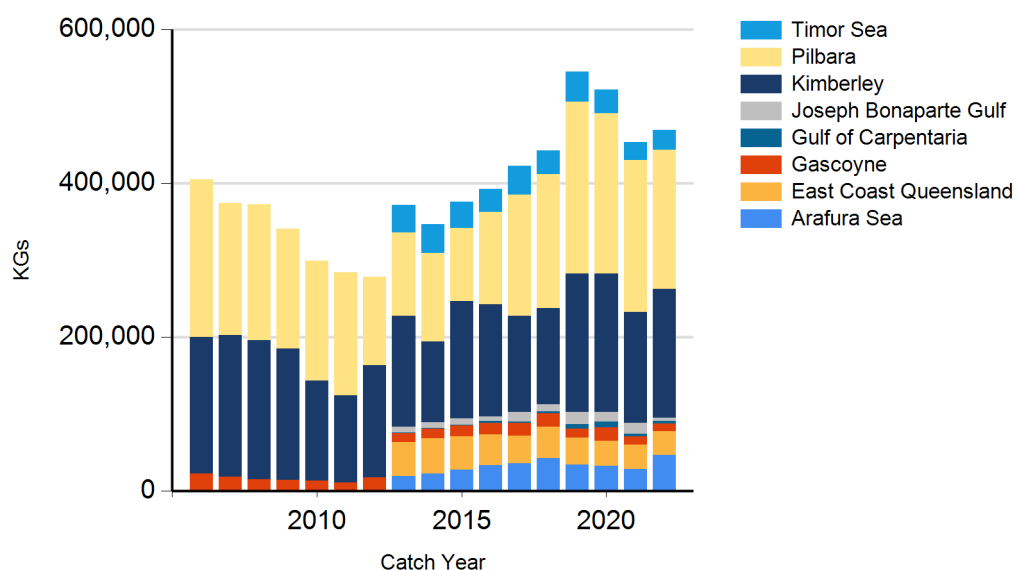
Queensland – Recreational Fishing (Catch). Data based at the whole of Queensland level and derived from statewide recreational fishing surveys. Estimates have been converted to weight (tonnes) using best known conversion multipliers. Conversion factors may display regional or temporal variability.

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

Queensland – Commercial (Management Methods). Harvest strategies available at: <https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy>

CATCH CHART

STATUS OF AUSTRALIAN FISH STOCKS REPORT
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Commercial catch of Red Emperor - note confidential catch not shown

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