Bluespotted Emperor (2018)

Lethrinus punctulatus

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Kimberley	NDSMF	Sustainable	Spawning stock biomass, fishing mortality rate, age structure, catch, CPUE
Western Australia	Pilbara	PFTIMF, PFTIMF || PLF || PTMF, PLF, PTMF	Sustainable	Spawning stock biomass, age structure, fishing mortality rate, catch, CPUE
Northern Territory	Northern Territory	N/A	Negligible	Catch

N/A Not Applicable (NT), 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), PFTIMF || PLF || PTMF Various Fisheries combined due to 3 boat rule (WA)

STOCK STRUCTURE

The distribution of Bluespotted Emperor is restricted primarily to Western Australian waters and extends from around Geraldton in the south to Darwin in the Northern Territory with its greatest relative abundances in the western Pilbara region [Carpenter and Niem 2001, Newman et al. 2018a]. Bluespotted Emperor are exploited primarily in the North Coast Bioregion of Western Australia [Newman et al. 2018a]. Very small catches are landed in the Northern Territory. Bluespotted Emperor is one of the indicator species used to assess the status of the demersal resources in the Pilbara subregion of the North Coast Bioregion [Newman et al. 2018b].

Johnson et al. [1993] examined allozymes (allelic variants of enzymes encoded by structural genes) from samples of Bluespotted Emperor from the Lacepede Islands, Bedout Island, Lowendal Islands, Ningaloo, Shark Bay and the Abrolhos Islands in Western Australia (spread over a distance of approx. 2 000 km). Bluespotted Emperor displayed little genetic variation over the geographic distance of sampling. While adult populations were not totally intermixed, the low level of genetic variation indicates extensive connectivity among populations of Bluespotted Emperor over large distances.

The lack of genetic differentiation among populations of Bluespotted Emperor across the northwest region of Western Australia indicates that there is gene flow among populations [Johnson et al. 1993, Moran et al. 1993] and there is one biological stock. Moran et al. [1993]

examined the elemental composition in sagittal otolith carbonates of Bluespotted Emperor from Maud Anchorage (Point Maud, Ningaloo), North-West Alison Point (Ningaloo) and Bedout Island (Pilbara). Significant differences were demonstrated between all three locations. The Maud Anchorage and North-West Alison Point locations are only separated by a distance of approximately 40 km. The results of the Moran et al. [1993] study indicate that there is limited mixing of adult Bluespotted Emperor assemblages. This indicates that in Western Australia, Bluespotted Emperor may comprise separate management units, if management arrangements are mediated in a way that harmonises with the spatial patterns of exploitation.

Here, assessment of stock status is presented at the management unit level—Pilbara and Kimberley (Western Australia); and at the jurisdictional level—Northern Territory.

STOCK STATUS

Kimberley

Bluespotted Emperor are landed in the Northern Demersal Scalefish Managed Fishery (NDSMF) in the Kimberley management region of the North Coast Bioregion of Western Australia [Newman et al. 2018a]. Bluespotted Emperor in this management unit are assessed on the basis of the status of two indicator species (Red Emperor and Goldband Snapper) that are considered to represent the entire inshore demersal suite of species occurring at depths of 30–250 m [Newman et al. 2018b]. The major performance measures for these indicator species are estimates of relative spawning stock levels derived using an integrated age-structured model. The target level of spawning biomass is 40 per cent of the unfished level. The limit level is 30 per cent of the estimate of initial spawning biomass [DPIRD 2017]. The spawning biomass levels of these two indicator species were either greater than the target level or between the target level and the threshold level in the NDSMF in 2014 [Newman et al. 2018a]. The above evidence indicates that the biomass of Bluespotted Emperor is unlikely to be depleted and that recruitment is unlikely to be impaired.

The catch of Bluespotted Emperor in the NDSMF has been low and stable for the past five years (2013–17), ranging from 42–63 tonnes (t), with a mean annual catch of 53 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 management unit is classified as a **sustainable stock**.

Northern Territory

Stock status for the Northern Territory jurisdiction is reported as Negligible due to extremely low or zero catches from this region, and because the stock is not subject to targeted fishing. There has been no recent catch reported for this species although there is probably a small annual catch (< 1 t) that is misreported as 'Emperor general' in recreational fishing surveys.

Pilbara

Bluespotted Emperor are landed primarily in the Pilbara Trap Managed Fishery and Pilbara Fish Trawl Interim Managed Fishery in the Pilbara management region of the North Coast Bioregion of Western Australia [Newman et al. 2018a]. The major performance measures for the Pilbara management unit are based on estimates of current relative spawning stock levels of Bluespotted Emperor in the Pilbara Demersal Scalefish Fisheries derived using an integrated age-structured model. The target level of spawning biomass is 40 per cent of unfished (1972) biomass. The limit level is 30 per cent of the unfished spawning biomass [DPIRD 2017]. The spawning biomass level of Bluespotted Emperor overall (across all management areas was greater than 40 per cent in the Pilbara Demersal Scalefish Fisheries in 2015 (the year the last integrated assessment was undertaken). The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

An assessment of fishing mortality derived from representative samples of the

age structure of Bluespotted Emperor has also been undertaken for separate management areas in the Pilbara subregion in 2015. These fishing mortality (F) based assessments utilise the following reference levels based on ratios of natural mortality (M) that are applicable to each species, i.e. Ftarget = 2/3M, Fthreshold = M and Flimit = 3/2M [DPIRD 2017]. The fishing mortality based assessments and associated uncertainty ranges indicated that the fishing levels on Bluespotted Emperor in 2015 were mainly between the target and threshold levels in all management areas. The estimates of F indicate that the overall management unit is unlikely to have been heavily exploited during the time series for which data are available. The low estimates of F in the west, in its main area of abundance, further indicate that the exploitation on the overall management unit is currently low. The above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

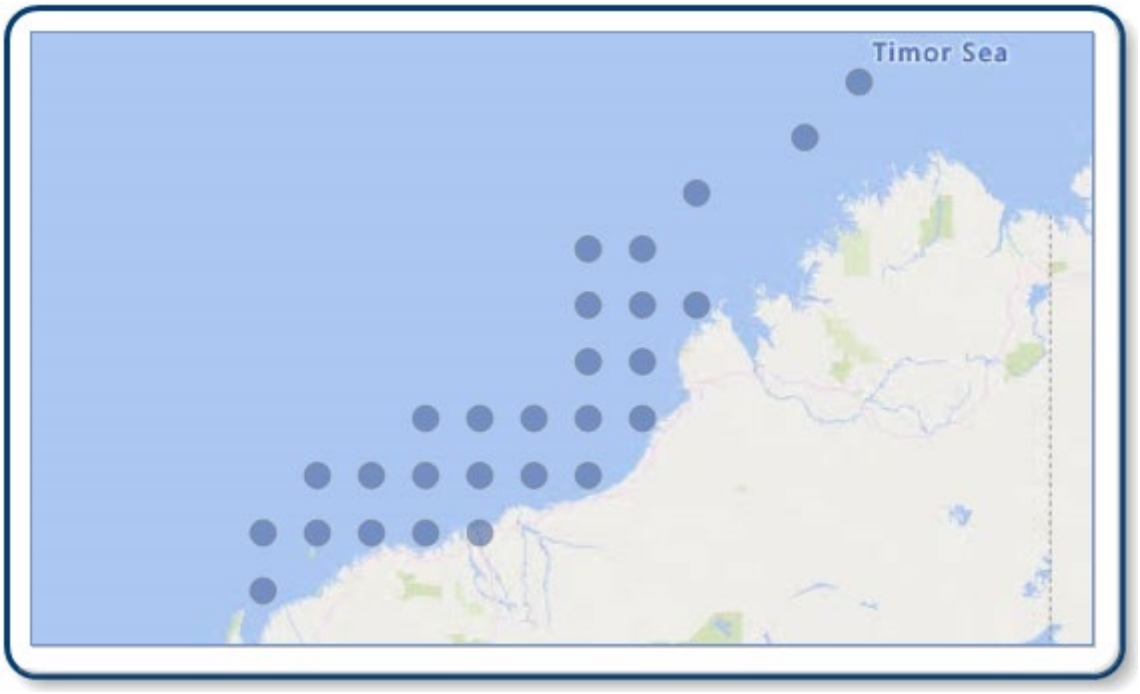
On the basis of the evidence provided above, the Pilbara management unit is classified as a **sustainable stock**.

BIOLOGY

Bluespotted Emperor biology [Wakefield et al. unpublished data]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Bluespotted Emperor	16 years, 384 mm FL	1.6 years, 206 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Bluespotted Emperor

TABLES

Commercial Catch Methods	Northern Territory	Western Australia
Fish Trap		✓
Hand Line, Hand		✓

Reel or Powered Reels		
N/A	✓	
Otter Trawl		✓
Unspecified		✓

Fishing methods	
	Western Australia
Charter	
Handline	✓
Commercial	
Fish Trap	✓
Hand Line, Hand Reel or Powered Reels	✓
Otter Trawl	✓
Unspecified	✓
Recreational	
Handline	✓
Spearfishing	✓

Management Methods	
	Western Australia
Charter	
Bag limits	✓
Limited entry	✓
Passenger restrictions	✓
Size limit	✓
Spatial closures	✓
Spatial zoning	✓
Commercial	
Effort limits	✓
Gear restrictions	✓
Limited entry	✓
Size limit	✓
Spatial closures	✓
Spatial zoning	✓
Total allowable catch	✓
Total allowable	✓

effort	
Vessel restrictions	✓
Indigenous	
Laws of general application	✓
Recreational	
Bag limits	✓
Licence (Recreational Fishing from Boat License)	✓
Possession limit	✓
Size limit	✓
Spatial closures	✓

Active Vessels	
	Western Australia
	<3 in PFTIMF, <3 in PLF, <3 in PTMF, <3 in Charter, 5 in NDSF,

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

PLF Pilbara Line Fishery(WA)

PTMF Pilbara Trap Managed Fishery(WA)

Charter Tour Operator(WA)

NDSF Northern Demersal Scalefish Fishery(WA)

Catch		
	Northern Territory	Western Australia
Charter		0.25 t
Commercial		41.8484t in NDSMF, 358.575t in PFTIMF || PLF || PTMF,
Indigenous		Unknown
Recreational		0.52 t ± 0.173 t se

N/A Not Applicable (NT), 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), PFTIMF || PLF || PTMF Various Fisheries combined due to 3 boat rule (WA),

Western Australia Active Vessels data is 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 – 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.

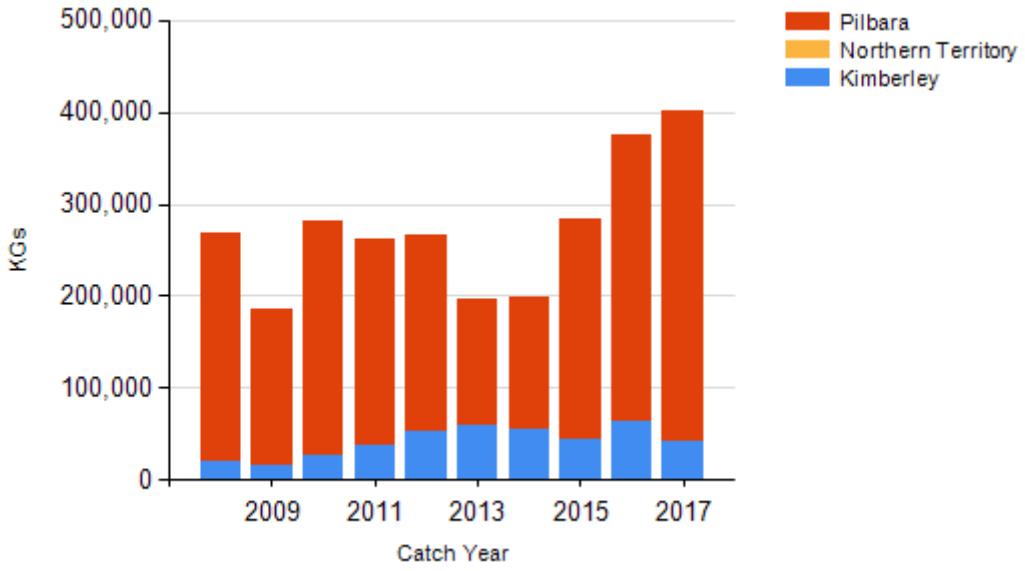
Western Australia – Recreational (management methods) A Recreational Fishing from Boat Licence is required for the use of a powered boat to fish or to transport catch or fishing gear to or from a land-based fishing location.

Western Australia – Indigenous 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".

CATCH CHART



Commercial catch of Bluespotted Emperor - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Bluespotted Emperor

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