

Eastern King Prawn (2018)

Melicertus plebejus



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Queensland, New South Wales	Eastern Australia	ECOTF, N/A, OTF	Sustainable	Biomass; catch, effort and CPUE relative to MSY reference points; fishery-independent index of recruit abundance

N/A Not Applicable (NSW), OTF Ocean Trawl Fishery (NSW), ECOTF East Coast Otter Trawl Fishery (QLD)

STOCK STRUCTURE

Eastern King Prawn (*Melicertus plebejus*) is endemic to Australia. It occurs on the eastern Australian coast between Hayman Island in Queensland and north-eastern Tasmania (20–42°S) and exhibits strong stock connectivity throughout its range [Montgomery 1990]. Undertaking northward migrations into deeper water as they grow, Eastern King Prawn utilise the East Australian Current to disperse larvae southward after spawning in offshore areas [Montgomery 1990]. Eastern King Prawn are harvested in Queensland and New South Wales fisheries and are considered a single multi-jurisdictional biological stock [Courtney et al. 2014, Montgomery 1990]. There are two contiguous management units for the stock: one from 22–28°S in Queensland, and another along the whole New South Wales coast (28–37.5°S). A comprehensive stock assessment of the Eastern Australia biological stock was completed in 2014 [Courtney et al. 2014, O'Neill et al. 2014].

Here, assessment of stock status is presented at the biological stock level—Eastern Australia.

STOCK STATUS

Eastern Australia

The most recent assessment [Courtney et al. 2014] estimates that biomass in 2010 was 60–80 per cent of the unfished 1958 levels. The stock is not considered to be recruitment impaired. Maximum sustainable yield (MSY) was estimated at 3 100 tonnes (t) (95 per cent confidence interval 2454–3612 t) [O'Neill et al. 2014]. The 2017 catch was 3 533 t (2906 t in Queensland, 627 t in New South Wales), which is above the estimate of MSY but within the range of the estimate. The average catch in 2015–17 was 3108 t, which is slightly above the estimate of MSY. The most recent stock assessment developed minimum monthly catch rate reference points that show levels of biomass that would sustain catches of MSY in each fishery region [Courtney et al. 2014]. For the

Queensland component of the stock, standardised monthly regional catch rates were mostly above MSY catch rate reference points for 2016 and 2017 fishing years [QDAF 2018], indicating the level of biomass was sufficient to sustain catches at MSY. Catch rates exceeded MSY catch rate reference points in all New South Wales regions for the majority of the 2016 and 2017 fishing years [QDAF 2018]. Fishery-independent surveys of recruit abundance in Queensland show variable recruitment to the fishery with no discernible trend over 10 years. Indices of recruit abundance display peaks in 2009 and 2013. The above evidence indicates that the biomass of the stock is unlikely to be recruitment impaired.

The most recent assessment [Courtney et al. 2014] estimates future effort (E) at MSY (EMSY), standardised to the number of boat-days in 2010, as 38 002 boat-days (95 per cent confidence interval 27 035–50 754 boat-days) assuming no further increase in fishing power. An alternative estimate of 28 300 boat-days (95 per cent confidence interval 20 110–37 663 boat-days) accounts for a three per cent per year increase in fishing power over the next decade from 2010 levels [O'Neill et al. 2014]. Effort in 2017 was 20 006 boat-days (15 064 boat-days in Queensland [QDAF 2018]; 4 942 boat-days in New South Wales [NSW DPI 2018]), which was well below both estimates of EMSY and the peak effort of around 50 000 boat-days in 2003, but similar to levels in 2015. This level of fishing pressure is unlikely to cause the stock to become recruitment impaired. The decline in effort since 2000 has been offset by increases in fishing power [Braccini et al. 2012]. The number of boats accessing the fishery has remained stable in Queensland since 2012 but has continued to decline in New South Wales. 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 Eastern Australia biological stock is classified as a **sustainable stock**.

BIOLOGY

Eastern King Prawn biology [Courtney et al. 1995, Courtney et al. 1996, Lloyd-Jones et al. 2012]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Eastern King Prawn	< 3 years, Males 52 mm CL, Females 73 mm CL	Females 42 mm CL

DISTRIBUTION



Eastern King Prawn biology [Courtney et al. 1995, Courtney et al. 1996, Lloyd-Jones et al. 2012]

TABLES

Commercial Catch Methods	New South Wales	Queensland
Otter Trawl	✓	✓
Unspecified	✓	

Fishing methods	New South Wales	Queensland
Commercial		
Otter Trawl	✓	✓
Unspecified	✓	
Indigenous		
Coastal, Estuary and River Set Nets	✓	
Recreational		
Coastal, Estuary and River Set Nets	✓	

Management Methods	New South Wales	Queensland
Charter		
Possession		✓

limit		
Commercial		
Effort limits		✓
Gear restrictions	✓	✓
Limited entry	✓	✓
Spatial closures	✓	✓
Temporal closures	✓	✓
Vessel restrictions	✓	✓
Indigenous		
Bag limits	✓	
Native Title	✓	
Section 37 (1d)(3)(9), Aboriginal cultural fishing authority	✓	
Recreational		
Bag limits	✓	
Possession limit		✓
Recreational fishing licence	✓	
Active Vessels		
	New South Wales	Queensland
	42 Fishing Business in EGF, 22 Fishing Business in EPTF, 74 Fishing Business in OTF,	175 in ECOTF,

EGF Estuary General Fishery(NSW)

EPTF Estuary Prawn Trawl Fishery(NSW)

OTF Ocean Trawl Fishery(NSW)

ECOTF East Coast Otter Trawl Fishery(QLD)

Catch	New South Wales	Queensland
Commercial	26.989t in N/A, 620.346t in OTF,	2906.74t in ECOTF,

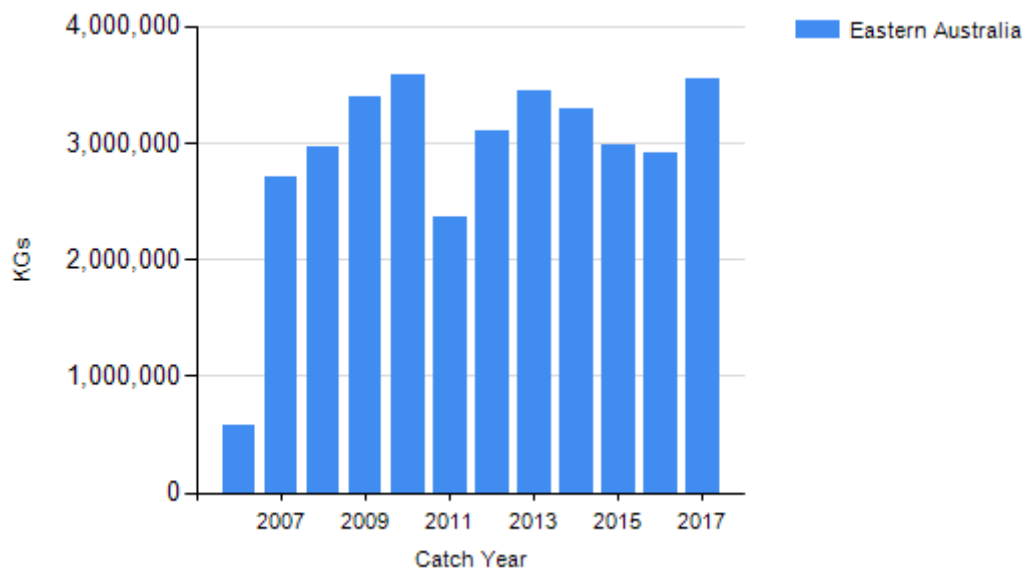
Indigenous	Unknown	Unknown
Recreational	<110 t (2008–09)	Unknown

N/A Not Applicable (NSW), OTF Ocean Trawl Fishery (NSW), ECOTF East Coast Otter Trawl Fishery (QLD),

Commercial (Catch) The 2017 fishing season for both jurisdictions is 1 November 2016 to 31 October 2017.

New South Wales – Indigenous (Management Methods) (a) Bag limits – The Aboriginal Cultural Fishing Interim Access Arrangement allows an Indigenous fisher in New South Wales to take in excess of a recreational bag limit in certain circumstances—for example, if they are doing so to provide fish to other community members who cannot harvest themselves; (b) Section 37 (1d)(3)(9), Aboriginal cultural fishing authority – The Aboriginal cultural fishing authority is the authority that Indigenous persons can apply to take catches outside the recreational limits under the *Fisheries Management Act 1994* (NSW), Section 37 (1d)(3)(9), Aboriginal cultural fishing authority; and (c) Native Title – In cases where the *Native Title Act 1993* (Cth) applies fishing activity can be undertaken by the person holding native title in line with S.211 of that Act, which provides for fishing activities for the purpose of satisfying their personal, domestic or non-commercial communal needs. In managing the resource where native title has been formally recognised, the native title holders are engaged with to ensure their native title rights are respected and inform management of the State's fisheries resources.

CATCH CHART



Commercial catch of Eastern King Prawn - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

ENVIRONMENTAL EFFECTS on Eastern King Prawn

References	
1748	NSWDPI Unpublished. Status of Australian Fish Stocks 2018 – NSW Stock status summary – Eastern King Prawn (<i>Melicertus plebejus</i>)
1749	O'Neill, MF, Leigh, GM, Wang, Y-G, Braccini, JM, and Ives, MC 2014, Linking spatial stock dynamics and economics: evaluation of indicators and fishery management for the travelling eastern king prawn (<i>Melicertus plebejus</i>), <i>ICES Journal of Marine Science</i> , 71(7): 1818–1834.

1744	Courtney, AJ, Die, DJ, and McGilvray, JG 1996, Lunar periodicity in catch rate and reproductive condition of adult eastern king prawns, <i>Penaeus plebejus</i> , in coastal waters of south-eastern Queensland, Australia, <i>Marine and Freshwater Research</i> , 47: 67–76.
1745	Courtney, AJ, Montgomery, SS, Die, DJ, Andrew, NL, Cosgrove, MG and Blount, C 1995, Maturation in the female eastern king prawn <i>Penaeus plebejus</i> from coastal waters of eastern Australia, and considerations for quantifying egg production in penaeid prawns, <i>Marine Biology</i> , 122: 547–556.
1746	Lloyd-Jones, LR, Wang, Y-G, Courtney, AJ, Prosser, AJ and Montgomery, SS 2012, Latitudinal and seasonal effects on growth of the Australian eastern king prawn (<i>Melicertus plebejus</i>), <i>Canadian Journal of Fisheries and Aquatic Sciences</i> , 69: 1525–1538.
1747	Montgomery, SS 1990, Movements of juvenile eastern king prawns, <i>Penaeus plebejus</i> , and identification of stock along the east coast of Australia, <i>Fisheries Research</i> , 9: 189–208.
1743	Courtney, AJ, O'Neill, MF, Braccini, M, Leigh, GM, Kienzle, M, Pascoe, S, Prosser, AJ, Wang, Y-G, Lloyd-Jones, L, Campbell, AB, Ives, M, Montgomery, SS and Gorrington, J 2014, Biological and economic management strategy evaluations of the eastern king prawn fishery, FRDC project 2008/019 final report, Department of Agriculture, Fisheries and Forestry, Queensland.
1742	Braccini, JM, O'Neill, MF, Campbell, AB, Leigh, GM and Courtney, AJ 2012, Fishing power and standardized catch rates: implications of missing vessel-characteristic data from the Australian eastern king prawn (<i>Melicertus plebejus</i>) fishery, <i>Canadian journal of fisheries and aquatic sciences</i> , 69: 797–809.
1750	Queensland Department of Agriculture and Fisheries 2018, Queensland Stock Status Assessment Workshop Proceedings 2018. Species Summaries. 19–20 June 2018, Brisbane.