



Eastern King Prawn

Melicertus plebejus

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STOCK STATUS OVERVIEW

Stock status determination

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

ECOTF East Coast Otter Trawl Fishery (QLD)

EPTF Estuary Prawn Trawl Fishery (NSW)

OTF Ocean Trawl Fishery (NSW)

STOCK STRUCTURE

Eastern King Prawn (*Melicertus plebejus*) is endemic to Australia. It is one of two Australian species (the other being Western King Prawn: *Melicertus latisulcatus*) recognised by the standard fish name 'King Prawn'¹. Eastern King Prawn occurs on the eastern Australian coast between Hayman Island in Queensland and north-eastern Tasmania (20–42°S respectively), and the species exhibit strong stock connectivity throughout their range². Undertaking northward migrations into deeper water as they grow, Eastern King Prawns utilise the East Australian Current to disperse larvae southward after spawning in offshore areas². Eastern King Prawns are harvested in Queensland and New South Wales fisheries, and are considered a single multi-jurisdictional biological stock^{2,3}. 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 Australian biological stock was completed in 2014^{3,4}.

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

STOCK STATUS

Eastern Australia

The most recent assessment³ estimates that biomass in 2010 was 60–80 per cent of the unfished 1958 levels. The stock is not considered to be recruitment overfished. Maximum sustainable yield (MSY) was estimated at 3100 tonnes (t) (95 per cent confidence interval 2454–3612 t)⁴. The 2015 catch was 2892 t (2363 t in Queensland; 529 t in New South Wales), which is below the estimate of MSY. The average catch in 2013–15 was 3135 t, which is slightly above the estimate of MSY. The most recent stock assessment developed minimum monthly catch rate reference points that imply levels of biomass would be sufficient to sustain catches of MSY in each fishery region³. For the Queensland component of the stock, standardised monthly regional catch rates were mostly above MSY catch rate reference points between 2009 and 2015⁵, indicating the level of biomass was sufficient to sustain catches at MSY. For the New South Wales component of the stock, the median nominal commercial catch rates were relatively stable between 2012 and 2015, and slightly greater than catch rates prior to 2012⁶. Fishery-independent surveys of recruit abundance show variable recruitment to the fishery with no discernible trend over 10 years. Indices of recruit abundance display peaks in 2008 and 2012. The above evidence indicates that the biomass of the stock is unlikely to be recruitment overfished.

The most recent assessment³ estimates future effort (E) at MSY (E_{MSY}), 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 or costs. 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 and costs from 2010 levels⁴. Effort in 2015 was 20 076 boat-days (14 688 boat-days in Queensland⁵; 5388 boat-days in New South Wales⁶), which was well below both estimates of E_{MSY} and the peak effort of around 30 000 boat-days in 2000, but similar to levels in 2013. This level of fishing pressure is unlikely to cause the stock to become recruitment overfished. The decline in effort since 2000 has been offset by increases in fishing power⁷. The number of boats accessing the fishery has remained stable in Queensland since 2013, but has continued to decline in New South Wales. The above evidence indicates that the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

On the basis of the evidence provided above, the Eastern Australian biological stock is classified as a **sustainable stock**.

BIOLOGY

Eastern King Prawn biology 8-10**Biology**

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

DISTRIBUTIONS

Distribution of reported commercial catch of Eastern King Prawn

TABLES**Fishing methods**

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

Management methods

Method	Queensland	New South Wales
Commercial		
Effort limits	✓	
Gear restrictions	✓	✓
Limited entry	✓	✓
Spatial closures	✓	✓
Temporal closures	✓	✓
Vessel restrictions	✓	✓
Indigenous		
Bag limits		✓
Section 31 (1)(c1), Aboriginal cultural fishing authority		✓
Recreational		
Bag limits		✓
Possession limit	✓	
Recreational fishing licence		✓

Active vessels

	Queensland	New South Wales
	165 in ECOTF	15 in EPTF, 63 in OTF

ECOTF East Coast Otter Trawl Fishery (QLD)

EPTF Estuary Prawn Trawl Fishery (NSW)

OTF Ocean Trawl Fishery (NSW)

Catch

	Queensland	New South Wales
Commercial	2.36Kt in ECOTF	976.20kg in EPTF, 527.66t in OTF
Indigenous	Unknown	Unknown
Recreational	Unknown	<110 t (2008–09)

ECOTF East Coast Otter Trawl Fishery (QLD)

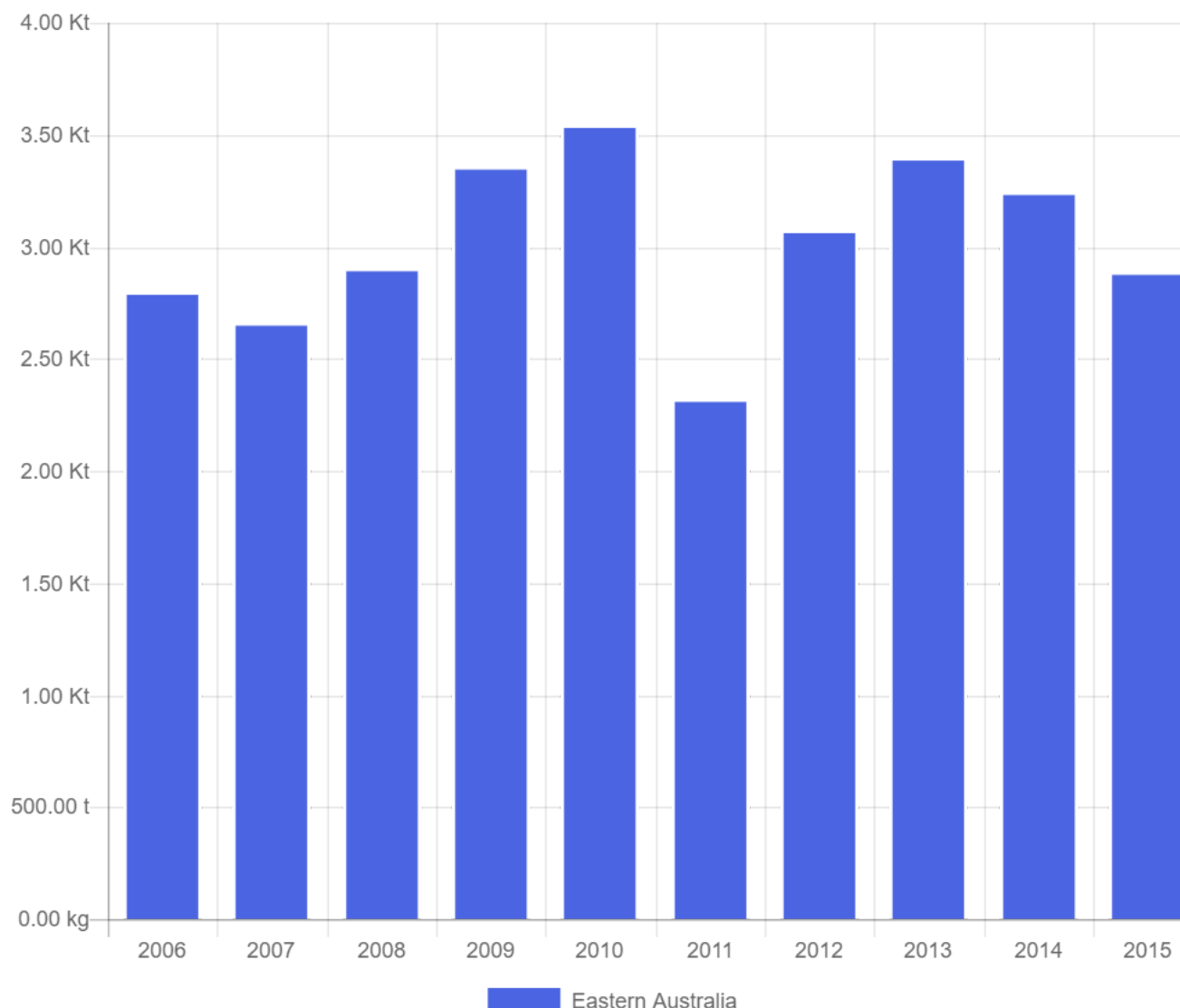
EPTF Estuary Prawn Trawl Fishery (NSW)

OTF Ocean Trawl Fishery (NSW)

a Commercial (catch) The 2015 fishing season for both jurisdictions is 1 November 2014 to 31 October 2015.

b New South Wales – Indigenous 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 for themselves. Aboriginal cultural fishing authority - the authority that Indigenous persons can apply to take catches outside the recreational limits under the Fisheries Management Act 1994 (NSW), Section 37 (1)(c1) (Aboriginal cultural fishing authority).

CATCH CHART



Commercial catch of Eastern King Prawn

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Prawn trawling involves interactions with the benthic environment ¹², but can only occur over sandy or muddy substrates and not where habitat-forming biota exist ¹³. Research shows that trawling in Queensland has no significant effect upon biodiversity or distribution patterns of benthic species compared to areas that are not trawled ^{13,14}. In Queensland, although permitted in 34 per cent of area inside the Great Barrier Reef Marine Park (GBRMP) ⁵, trawling only occurs in suitable areas within the permitted area and poses only an intermediate risk of overfishing species assemblages ¹⁵. South of the GBRMP, trawling occurs in 10 per cent of the available area ¹⁶.
- Improvements in technology and the mandatory uptake of bycatch reduction and turtle excluder devices, combined with fewer boats accessing the fishery, have reduced the overall amount of bycatch in the fishery ¹⁷⁻²¹. Interactions with species of conservation interest, including turtles, sea snakes and large elasmobranchs have also been reduced ¹⁹. A reduction in bycatch per trawl probably improves the survival of discards and quality of retained product ²⁰.

ENVIRONMENTAL EFFECTS ON EASTERN KING PRAWN

- Climate change is likely to have a significant long-term effect on the distribution of this species. Under a scenario of increasing sea surface temperatures, the distribution of Eastern King Prawn may shift southwards, potentially impacting recruitment and the timing of migration^{22,23}. A study of Moreton Bay indicated that recruitment in the Eastern King Prawn fishery tends to decline in years associated with warmer winters, suggesting that as coastal water temperatures rise, recruitment is also likely to decline in south-east Queensland²⁴. Loss of seagrass beds and altered water flows in estuaries could affect the area of nursery grounds available to recruiting prawns, and affect the size of the biological stock available for capture²⁴.

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