

# Eastern School Prawn (2018)

*Metapenaeus macleayi*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Queensland	Queensland	ECOTF, RIBTF	Sustainable	Catch, CPUE, risk assessment
New South Wales	New South Wales	EGF, EPTF, N/A, OTF	Sustainable	Catch, CPUE, environmental models
Victoria	Victoria	ITF	Undefined	Catch

EGF Estuary General Fishery (NSW), EPTF Estuary Prawn Trawl Fishery (NSW), N/A Not Applicable (NSW), OTF Ocean Trawl Fishery (NSW), ECOTF East Coast Otter Trawl Fishery (QLD), RIBTF River and Inshore Beam Trawl Fishery (QLD), ITF Inshore Trawl Fishery (VIC)

## STOCK STRUCTURE

Eastern School Prawn fisheries occur along the east coast of Australia, in Queensland, New South Wales and Victoria. Genetic work on the biological stock structure of this species is limited. There is some evidence for genetic differentiation between populations occurring from Tweed Heads northward (north of the Noosa River and Tweed River) and those from estuaries in New South Wales (estuaries within New South Wales were genetically homogenous ) [Mulley and Latter 1981]. No genetic information is available for Victorian populations.

As a result of uncertainty regarding the biological stock structure of Eastern School Prawn, assessment of stock status is presented at the jurisdictional level—Queensland, New South Wales and Victoria.

## STOCK STATUS

**New South Wales** Eastern School Prawn is commercially fished throughout most of its range in New South Wales, although there has been limited harvest between the latitudes 35 and 36°S in recent years. Eastern School Prawn is a fast growing, fast maturing and short lived species which generally exhibits high productivity [Racek 1959], but observations of recruitment and catch indicate substantial influence by environmental conditions (especially rainfall) [Pinto and Maheshwari 2012, Ruello 1973]. Simulation modelling has also established that environmental factors can have a strong influence on Eastern School Prawn catches [Ives et al. 2009]. These traits mean this species displays large inter-

annual variations in recruitment. No published stock assessment is available for Eastern School Prawn in New South Wales, so stock status is evaluated through a review of indicators of biomass and fishing pressure, using a weight of evidence approach.

Catches of this species have fluctuated around a long-term average of about 778 t over the period 1998–2017, with no consistent trend evident over this time series. Catches increased steadily over the period 2002–09 from 485–1119 t and decreased thereafter to ~428 t in 2017. The mid-far northern New South Wales coast, in particular the Clarence River, has experienced lower than average spring/summer rainfall since 2014. This is the most likely proximal driver of the patterns observed in the recent catch history. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Since 2008, fishing effort for Eastern School Prawn has remained well below levels recorded for earlier periods. Overall fishing effort was lower in 2017 (Estuary Prawn Trawl Fishery [EPTF] ~3200 days; Estuary General Fishery [EGF] ~1600 days; Ocean Trawl Fishery [OTF] ~250 days), relative to the average effort across the period 2010–16 (EPTF ~4400 days; EGF ~4000 days; OTF ~700 days). Harvest by the EPTF comprised the majority of the catch. Nominal catch rates of Eastern School Prawn in the EPTF were slightly lower in 2017 than for the period 2010–16. However, overall EPTF catch rates have remained positively correlated ( $R[2] = 0.85$ ) with catches over the period 2010–17, indicating that catch trends are largely driven by changes in availability and abundance, probably caused by environmental factors affecting spawning and recruitment success. Thus, fluctuations in stock abundance appear to be environmentally-driven, rather than driven by the fishery itself. 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, Eastern School Prawn in New South Wales is classified as a **sustainable stock**.

**Queensland** Biomass and fishing pressure evidence for the status of Eastern School Prawn in Queensland is primarily derived from the River and Inshore Beam Trawl Fishery (RIBTF), which targets this species. Catch and effort within the East Coast Otter Trawl Fishery is opportunistic and highly variable, and has not been used to determine stock status.

Annual catches in the RIBTF have tended to be variable, peaking at more than 130 tonnes (t) in 1991, 1995 and 2004, but averaging 55 t over the entire period 1990–2017. The mean annual catch (6 t) in recent years (2013–17) has been below the long-term average. Nominal catch rates were reasonably stable over the early part of the fishery and then increased from 47 kg per day in 2000 (64 per cent of the 1990–2017 long-term average of 74 kg per day) to more than 94 kg per day in 2017 (27 per cent greater than the long-term average).

Eastern School Prawn inhabit numerous estuarine habitats in Queensland and a portion of this biomass remains unfished, with fishing effort being confined to accessible sections of larger river systems due to vessel size. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Fishing effort has declined steadily over the history of the fishery, particularly since 2009, following several licence reduction schemes. After fluctuating around an average of about 930 days fished per year from 1990–2010, effort decreased to around 280 days fished per year over the 2011–13 period, declining further to slightly more than 30 days fished per year in 2017 [QDAF 2018a].

An ecological risk assessment established that Eastern School Prawn had a high resilience to fishing pressure [QDAF 2018b], and found that the species was at a

low risk of being overfished at 2009 effort levels. Current effort (days fished) is substantially less than 2009 effort levels and the number of licences reporting catch is also at historically low levels. This current low level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, Eastern School Prawn in Queensland is classified as a **sustainable stock**.

**Victoria**

Eastern School Prawn is caught primarily as part of the commercial Inshore Trawl Fishery, mainly off the Gippsland coast of eastern Victoria. The Eastern School Prawn fishery is seasonal with effort concentrated in the warmer months. The assessment provided is focused on the Inshore Trawl Fishery, which represents 97 per cent of the total catch since 2000. The remaining catch was from the Gippsland Lakes Fishery (GLF) and bait fisheries. Recreational catch is unknown.

Catch has generally increased since the early 2000s. A substantial increase in catch occurred between 2013 and 2016, when catch increased from 16.82 t to a historical peak of 119.7 t in 2016, and then dropped to 27.04 t in 2017 [VFA Unpublished]. Drifting seaweed that severely obstructed nets substantially reduced in catch in 2017. Catch per unit effort (CPUE), as a proxy for biomass, has been quite variable with several large fluctuations occurring in the commercial inshore trawl fishery between 2008 and 2017. CPUE, however, has mostly been above the long-term average of 7.31 kg/shot since 2010.

On the basis of the evidence provided above, Eastern School Prawn in Victoria is classified as an **undefined stock**.

**BIOLOGY**

**Eastern School Prawn biology** [Rowling et al. 2010]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Eastern School Prawn	Male 32 months, 32 mm CL Female 32 months, 32 mm CL	Male 97 mm TL Female 132 mm TL

**DISTRIBUTION**



Distribution of reported commercial catch of Eastern School Prawn

TABLES

Commercial Catch Methods	New South Wales	Queensland	Victoria
Beam Trawl		✓	
Hand held-Implements			✓
N/A		✓	
Net	✓		✓
Otter Trawl	✓	✓	✓
Unspecified	✓		✓

Fishing methods			
	New South Wales	Queensland	Victoria
<b>Commercial</b>			
Beam Trawl		✓	
Net	✓		
Otter Trawl	✓	✓	✓
Unspecified	✓		
<b>Indigenous</b>			
Cast Net		✓	
Coastal, Estuary and River Set Nets	✓		
<b>Recreational</b>			
Beach Seine		✓	
Cast Net		✓	
Coastal, Estuary and River Set Nets	✓		
Dip Net			✓
Haul Seine			✓

Management Methods			
	New South Wales	Queensland	Victoria
<b>Charter</b>			
Possession limit		✓	
<b>Commercial</b>			
By-catch reduction	✓	✓	

devices			
Gear restrictions			✓
Limited entry	✓	✓	✓
Size limit	✓		
Spatial closures	✓	✓	✓
Temporal closures	✓	✓	
Vessel number restrictions	✓	✓	
<b>Indigenous</b>			
Bag limits	✓		
Customary fishing permits			✓
Native Title	✓		
Section 37 (1d)(3)(9), Aboriginal cultural fishing authority	✓		
<b>Recreational</b>			
Bag limits	✓		✓
Gear restrictions			✓
Possession limit		✓	
Recreational fishing licence	✓		✓
Spatial closures			✓
<b>Active Vessels</b>			
	<b>New South Wales</b>	<b>Queensland</b>	<b>Victoria</b>
	133 Fishing Business in EGF, 79 Fishing Business in EPTF, 44 Fishing Business in OTF,	10 in ECOTF, 6 in RIBTF,	1 Licence Holders in GLF, 10 Licence Holders in ITF,

**EGF** Estuary General Fishery(NSW)

**EPTF** Estuary Prawn Trawl Fishery(NSW)

**OTF** Ocean Trawl Fishery(NSW)

**ECOTF** East Coast Otter Trawl Fishery(QLD)

**RIBTF** River and Inshore Beam Trawl Fishery(QLD)

GLF Gippsland Lakes Fishery(VIC)

ITF Inshore Trawl Fishery(VIC)

Catch			
	New South Wales	Queensland	Victoria
<b>Commercial</b>	124.069t in EGF, 269.189t in EPTF, 0.346t in N/A, 31.081t in OTF,	4.269t in ECOTF,	27.0365t in ITF,
<b>Indigenous</b>	Unknown	Unknown	Unknown (No catch under permit)
<b>Recreational</b>	<110 t (2000–01, all prawn species)	Unknown	Unknown

EGF Estuary General Fishery (NSW), EPTF Estuary Prawn Trawl Fishery (NSW), N/A Not Applicable (NSW), OTF Ocean Trawl Fishery (NSW), ECOTF East Coast Otter Trawl Fishery (QLD), RIBTF River and Inshore Beam Trawl Fishery (QLD), ITF Inshore Trawl Fishery (VIC),

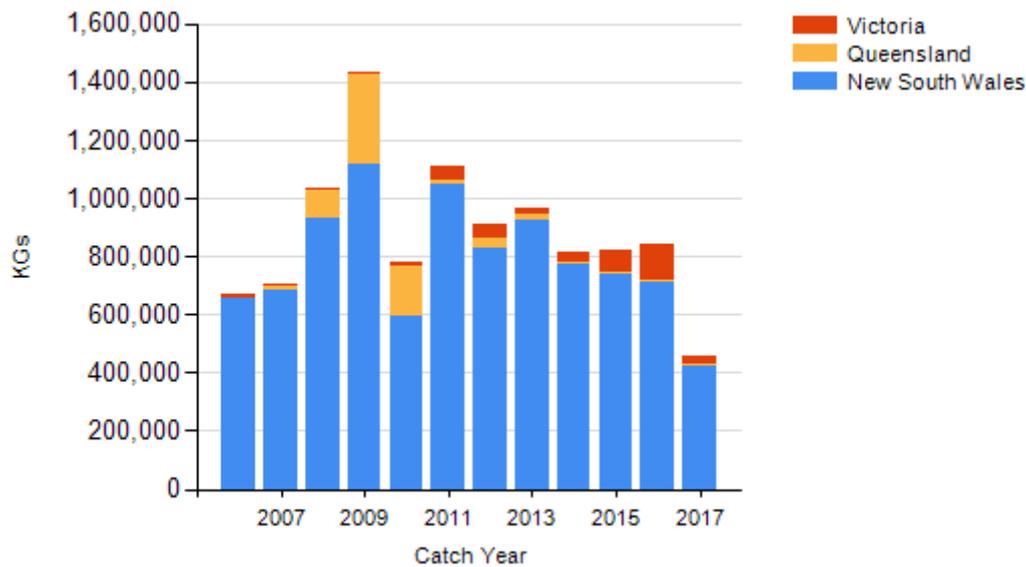
**Queensland – Indigenous (Management Methods)** Under the *Fisheries Act 1994* (Qld), Indigenous fishers in Queensland are entitled to use prescribed traditional and non-commercial fishing apparatus in waters open to fishing. Size and possession limits, and seasonal closures do not apply to Indigenous fishers. Further exemptions to fishery regulations may be applied for through permits.

**New South Wales – Commercial (Management Methods)** Size limit – Prawn counts apply to commercial fisheries in NSW and serve as a proxy to size limit.

**New South Wales – Indigenous (Management Methods)** (a) 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) 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) 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.

**Victoria – Indigenous (Management Methods)** In Victoria, regulations for managing recreational fishing may not apply to fishing activities by Indigenous people. Victorian traditional owners may have rights under the Commonwealth's *Native Title Act 1993* to hunt, fish, gather and conduct other cultural activities for their personal, domestic or non-commercial communal needs without the need to obtain a licence. Traditional Owners that have agreements under the *Traditional Owner Settlement Act 2010* (Vic) may also be authorised to fish without the requirement to hold a recreational fishing licence. Outside of these arrangements, Indigenous Victorians can apply for permits under the *Fisheries Act 1995* (Vic) that authorise fishing for specific Indigenous cultural ceremonies or events (for example, different catch and size limits or equipment). There were no Indigenous permits granted in 2017 and hence no Indigenous catch recorded.

## CATCH CHART



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

## EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

### ENVIRONMENTAL EFFECTS on Eastern School Prawn

References	
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1721	Rowling, K, Hegarty, A and Ives, M 2010, Status of fisheries resources in NSW 2008–09, <i>New South Wales Industry and Investment</i> , Cronulla.
1722	Ruello NV 1973, Influence of rainfall on distribution and abundance of school prawn <i>Metapenaeus macleayi</i> in Hunter River Region (Australia), <i>Marine Biology</i> , 23: 221–228.
1723	Queensland Department of Agriculture and Fisheries 2018b, An ecological risk assessment of the East Coast Trawl Fishery in southern Queensland including the River and Inshore Beam Trawl Fishery, Queensland Department of Agriculture, Fisheries and Forestry, Brisbane.
1724	Queensland Department of Agriculture and Fisheries 2018a, Queensland Stock Status Assessment Workshop Proceedings 2018. Species Summaries. 19–20 June 2018, Brisbane.
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