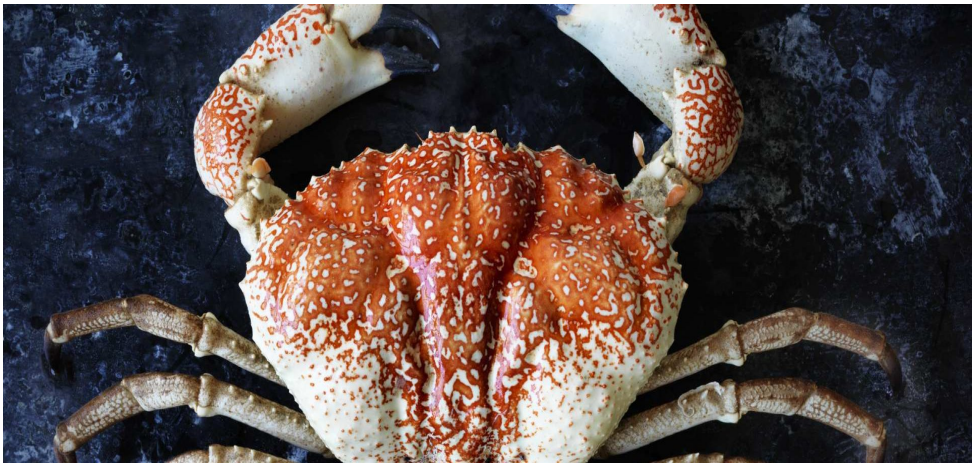
Giant Crab (2020)

Pseudocarcinus gigas



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Western Australia	Sustainable	CPUE, catch, effort, proportion of habitat unexploited
Victoria	Giant Crab Fishery (Victoria)	Sustainable	CPUE, catch, effort, proportion of spawning stock protected by minimum size limits
Tasmania	Giant Crab Fishery (Tasmania)	Depleted	CPUE, catch, effort, pre-recruit abundance
South Australia	South Australia	Sustainable	CPUE, catch, effort, mean weight, pre-recruit abundance, sex ratio, spawning female abundance

STOCK STRUCTURE

Giant Crab is considered to be a single biological stock from Western Australia to Tasmania because the species is continuously distributed across this range. Planktonic larval duration is around 50 days, with larval release occurring along the edge of the continental shelf. The shelf is a high current area, facilitating dispersal, and oceanographic modelling has indicated that Giant Crab dispersal occurs over large spatial scales [Gardner 1998, Gardner and Quintana 1998, Williams et. al. 2009].

Status of Australian Fish Stocks reports on Giant Crab up to 2016 provided an overall assessment for this assumed biological stock. However, there have been significant changes in the relative performance of the various fisheries operating across this stock since 2014. New information indicates that Giant Crab are now considered to be depleted in Tasmania but sustainable in Western Australia. It is difficult to reconcile these differences in regional depletion levels under an assumption of a single stock. But management arrangements also vary across jurisdictions and the fishing fleets in each jurisdiction consist of vessels with different characteristics, resulting in different patterns of exploitation.

Assessment of stock status is presented here at the jurisdictional level—Western Australia and South Australia; and the management unit level—Giant Crab Fishery (Victoria) and Giant Crab

Fishery (Tasmania).

STOCK STATUS

Giant Crab Fishery (Tasmania)

A length-based model has been developed to estimate annual levels of Giant Crab biomass and egg production. The model includes catch and effort data from commercial fisheries [Gardner et. al. 2007]. This model was used to develop the current sex-specific size limits (carapace length of 140 mm for males and 150 mm for females to afford protection to mature female crabs, which are also protected whilst berried and through female spawning closures. Despite these measures, egg production has decreased to an estimated 14 per cent of unfished levels in 2013–14 [Emery et. al. 2018]. This level of egg production is considered inadequate relative to benchmarks in most crustacean fisheries [Fogarty and Gendron 2004]. Due to its slow growth and longevity, Giant Crab is particularly susceptible to becoming recruitment overfished.

Since the 2013–14 assessment the model has not been updated due to a lack of data, and analyses have focused instead on CPUE trends. Standardised CPUE decreased by approximately 65% from the inception of the Tasmanian fishery to 2015. Since 2015 standardised CPUE appears to have stabilised with an early indication of a possible increase, however at present this is insufficient evidence to indicate that the stock is recovering. The above evidence indicates that the biomass of this stock is likely to be depleted and that recruitment is likely to be impaired. The above evidence also indicates the current fishing mortality levels are expected to prevent the stock recovering from a recruitment impaired state.

On the basis of the evidence presented above, the Giant Crab Fishery (Tasmania) management unit is classified as a **depleted stock**.

Giant Crab Fishery (Victoria)

Management of Giant Crab fishing mortality in Victoria is achieved through a TACC and legal minimum length (carapace length of 140 mm for males and 150 mm for females) to protect mature undersized crabs. The LML aims to ensure that egg production remains at no less than 40 per cent of unfished levels [McGarvey et al. 1999]. However, there is considerable uncertainty around the growth rates and sizes at maturity of larger females and hence in the degree of protection provided by these limits. Setting of an annual TACC occurs according to the performance measures and strategies specified in the Victorian Giant Crab Fishery Management Plan [Fisheries Victoria 2010]. Catch per unit effort (CPUE) is the primary indicator of Giant Crab biomass and is expressed as the catch taken per 24-hour pot-lift, by fishers landing more than 1 t in a fishing season. The TACC was set at 25 t from 2002–11 but was decreased over several years in response to declining catch rates, to 10.5 t in 2014–15, and has since been maintained at this level. As the result of increasing soak times, a standardisation method using a four-day soak time cap was implemented in 2015. The targeted catch rate in 2018–19 was 1.04 kg/24 hour pot-lift. This is a substantial reduction from 1.27kg/24 hour pot-lift in 2017–18 but remains well above the limit reference point of 0.52 kg/24 hour pot-lift for the fishery [VFA 2020]. Factors including the lack of fishery independent surveys, limited length frequency data, the significant decline in the number of operators targeting giant crab and a decrease in the spatial distribution of the fishery, all add to the uncertainty in the assessment of the Victorian component of the Giant Crab stock. Nonetheless, the above evidence indicates that the biomass of this stock is unlikely to be depleted, that recruitment is unlikely to be impaired, and that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence presented above, the Giant Crab Fishery (Victoria) management unit is classified as a **sustainable stock.**

South Australia

The South Australian Giant Crab Fishery comprises three commercial fishing sectors: (1) the Miscellaneous Fishery sector; (2) the South Australian Rock Lobster Fishery (SARLF) quota sector (RL-quota); and (3) the SARLF by-product sector (RL by-product). Fishing mortality in South Australia is managed through Total Allowable Commercial Catches (TACCs) and a minimum legal size (MLS) (150 mm carapace length) to protect females up to spawning size. The management policy for the fishery guides the classification of stock status relative to limit, trigger and target reference points for a CPUE-based performance indicator relating to relative stock biomass measured from 2000–01 to 2009–10 (a relatively stable period of data collection from Giant Crab catch logbooks). The five-year average commercial CPUE of legal-size Giant Crab calculated from data collected from targeted fishing in the Miscellaneous Fishery and RL-quota sectors is the primary indicator for biomass and fishing mortality [PIRSA 2018, McLeay 2020].

The most recent assessment was based on data to the end of the 2018–2019 season (1 October 2018–31 May 2019) [McLeay 2020]. In 2018–19, 8 051 potlifts caught a total of 16.8 t of Giant Crab, comprising 76.0 per cent of the TACC of 22.1 t in that season.

Commercial CPUE increased from 2.3 kg/potlift at the start of the time series in 2004–05 to reach a peak of 3.05 kg/potlift in 2008–09. CPUE then decreased to 2.3 kg/potlift in 2013–14. Average CPUE over the period 2004–13 was 2.62 kg/potlift, and above the target of 2.60 kg/potlift. Since then, CPUE levels have been lower than historical values but relatively stable, remaining above the trigger level of 1.95 kg/potlift and at approximately 83 per cent of both the 2004–13 average and the target level [McLeay 2020]. In 2018–19 commercial CPUE was 2.13 kg/potlift. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the 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 presented above, Giant Crab in South Australia is classified as a **sustainable stock**.

Western Australia

Limited data are available for Giant Crab targeted fishing in Western Australia, with catches being generally either a byproduct of Southern Rock Lobster fishing, or as part of a combined catch of other deep sea crabs. Recently, logbook data have become available to provide limited data on targeted Giant Crab catches. Catches of Giant Crabs in Western Australia fluctuated, increasing from 4.8 t in 2009–10 to 14.6 t 2012–13, before generally remaining around ~10 t from the 2014–15 to 2019–20 seasons. With current landings coming from across a wide geographic range, when compared to the other jurisdictions, there are large portions of the stock in Western Australia (particularly east of longitude 125°E) that are not being exploited. The above evidence indicates that the biomass of this stock is unlikely to be depleted, that locally-sourced recruitment is unlikely to be impaired, and that the current level of fishing pressure is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence presented above, Giant Crab in Western Australia is classified as a **sustainable stock**.

BIOLOGY

Giant Crab biology [Gardner 1998, McGarvey et. al. 1999, Williams et. al. 2009,]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Giant Crab	≥ 30 years, > 200 mm CL , ~10 kg	125–140 mm CL, depending on region

DISTRIBUTION

Distribution of reported commercial catch of Giant Crab

TABLES

Fishing methods				
	South Australia	Tasmania	Victoria	Western Australia
Commercial				
Giant Crab Trap	✓			
Pots and Traps		✓		
Traps and Pots			✓	✓
Recreational				
Giant Crab Trap	✓	✓		
Traps and Pots				✓
Unspecified				✓

Management Methods				
	South Australia	Tasmania	Victoria	Western Australia
Commercial				
Limited entry	✓	✓	✓	✓
Quota	✓	✓	✓	✓
Size limit	✓	✓	✓	✓
Spatial closures	✓	✓	✓	✓

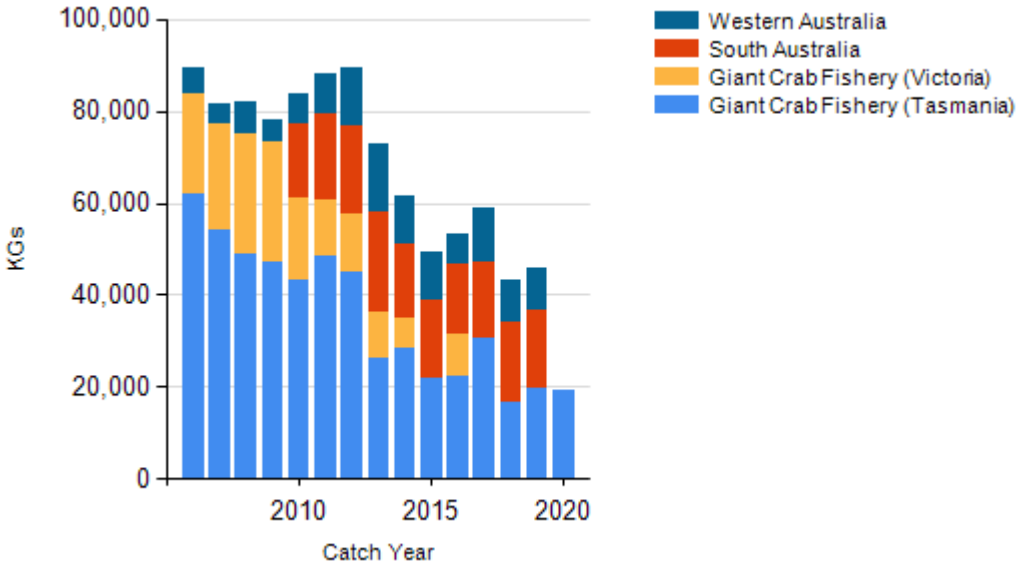
Temporal closures	✓	✓	✓	✓
Recreational				
Possession limit		✓		
Size limit	✓	✓		✓
Temporal closures	✓	✓		✓

Catch				
	South Australia	**Tasmania**	**Victoria**	**Western Australia**
Commercial	16.7967 t	19.94 t	0 t	9.2756 t
Indigenous	Negligible	Negligible	Unknown (No catch under permit)	Zero
Recreational	Negligible	Negligible	Unknown	Negligible

South Australian data are from quota holders in the 2016–17 fishing season (October 2016–May 2017), Victorian data are for the 2016–17 fishing season (November 2016–September 2017), Tasmanian data are for the 2017-18 fishing season (March 2017 – February 2018) and South Coast Crustacean Managed Fishery (Western Australia) data are for the 2019–20 financial year.

Victoria – Indigenous (Management Methods) A person who identifies as Aboriginal or Torres Strait Islander is exempt from the need to obtain a Victorian recreational fishing licence, provided they comply with all other rules that apply to recreational fishers, including rules on equipment, catch limits, size limits and restricted areas. Traditional (non-commercial) fishing activities that are carried out by members of a traditional owner group entity under an agreement pursuant to Victoria's *Traditional Owner Settlement Act 2010* are also exempt from the need to hold a recreational fishing licence, subject to any conditions outlined in the agreement. Native title holders are also exempt from the need to obtain a recreational fishing licence under the provisions of the Commonwealth's *Native Title Act 1993*.

CATCH CHART



Commercial catch of Giant Crab - note confidential catch not shown

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