

Silverlip Pearl Oyster (2023)

Pinctada maxima



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia	Western Australia	Sustainable	CPUE, recruitment surveys, population surveys, biomass prediction modelling
Northern Territory	Northern Territory	Sustainable	Biomass, fishing mortality
Queensland	Queensland	Sustainable	Catch, effort

STOCK STRUCTURE

Pinctada maxima or the Silverlip Pearl Oyster is the largest species in the pearl oyster family [Shirai 1994] and produces the largest pearls. It is distributed within the central Indo-Pacific region, bounded by the Bay of Bengal to the west, Solomon Islands to the east, Taiwan to the north, and Northern Australia to the south [Southgate et al. 2008], at depths from the shallow sub-tidal to more than 50 m. Within Australia, the population genetic distribution has been investigated in Western Australia and Northern Territory [Benzie et al. 2006]. The biological stock structure is uncertain; however, Western Australian stocks are generally considered to be one stock (with the possible exception of a localised population in Exmouth Gulf), separate from stocks in the Northern Territory. The biological stock structure for Queensland is unknown.

Here, assessment of stock status is presented at the jurisdictional level—Western Australia, Northern Territory and Queensland.

STOCK STATUS

Northern Territory

Large catches of Silverlip Pearl Oyster were taken from Northern Territory waters between 1901 and 1966. The catch peaked at 804 tonnes (t) in 1937 and the last significant catch was 339 t in 1957. Since that time, annual catches have been very low, primarily because the market for mother-of-pearl collapsed. Heavy historical fishing is considered to have depleted the stock in many areas along the Northern Territory coast [Knuckey 1995].

Surveys conducted in the 1990s found significant numbers of large, mature individuals, indicating that recruitment was occurring [Knuckey 1995]. Catches have remained low (generally less than 10 t) and sporadic since 1991 to supply niche markets and the last reported catch in the Northern Territory was 8.3 t in 2021. A preliminary assessment using catch data applied to a modified catch-MSY model (developed by Martell and Froese [2013] and modified by Haddon [2018]), estimated that the 2022 biomass of Silverlip Pearl Oyster was close to unfished levels [Pazhayamadam 2022] suggesting that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. No commercial harvest in 2022 meant that the fishing mortality was well below the limit reference point indicating that this catch level is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, Silverlip Pearl Oyster in the Northern Territory is classified as a **sustainable stock**.

Queensland

The Pearl Fishery (Queensland) is a small-scale, wild, minor harvest fishery that enables the collection of brood stock for the pearl aquaculture industry. The general demand for wild-harvested pearl oysters in the Queensland sector is very low as the majority of shells produced for cultivation are derived from pearl oyster hatcheries [Department of Employment, Economic Development and Innovation 2009].

Catches have been low in recent years, rarely exceeding 500 shells per year and 50 days of effort. There has been a long history of low catches and effort of Silverlip pearl oysters and no collection occurred between 2012–13 and 2016–17. Annual catches between 2017–18 and 2021–22 have averaged 103 shells per year and 26 effort days, suggesting that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. The harvest rate in 2021–22 was 158 shells and 31 effort days and is the highest catch rate in the last five years. Despite this, catch rates are still low in comparison to the historical peak of 419 shells and 32 effort days in 2008–09. It is reasonable to conclude 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, Silverlip Pearl Oyster in Queensland is classified as a **sustainable stock**.

Western Australia

The Western Australian Pearl Oyster Managed Fishery is the only remaining significant wild stock fishery for pearl oysters in the world. It is a quota-based dive fishery, operating in shallow coastal waters along the north-west shelf of WA. The harvest method is drift diving, in which six–eight divers are attached to large outrigger booms on a vessel and towed slowly over the pearl oyster beds, harvesting legal sized oysters by hand as they are seen. The species targeted is the Indo-Pacific, Silverlip Pearl Oyster (*P. maxima*). The Western Australian pearling industry comprises three main components: the collection of pearl oysters from the wild; production of hatchery-reared pearl oysters and the

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seeding of pearls, followed by grow-out of pearl oysters on pearl farm leases. Quota limits are set for the take of pearl oysters from the wild to ensure the long-term sustainability of the resource.

In the Western Australian Fishery, the standardised catch per unit effort (CPUE) increased by 200% from 2003 to 2010, declined from 2011 to 2015 and increased again from 2016 to 2022. It is currently above the target reference level in the harvest strategy [DoF 2016]. The large fluctuation in standardised CPUE was due to an order of magnitude variation in recruitment. Recruitment in this fishery is measured using a spat settlement index (oysters aged 0+ years and 1+ years) and the large recruitment variability is caused by environmental variation, which also affects the fishing efficiency of the pearl oyster fleet [Hart et al. 2011]. The stock-prediction model, which uses the spat settlement index to predict future stock abundance, is forecasting an increase in standardised CPUE in 2023 and 2024. Overall, the stock is entering a period of record high levels of stock abundance. Additional data, including population surveys, show that breeding stock levels are also currently above the target reference point [DoF 2016], suggesting that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Also, catch rates of Silverlip Pearl Oyster were exceptionally high in 2022, which indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

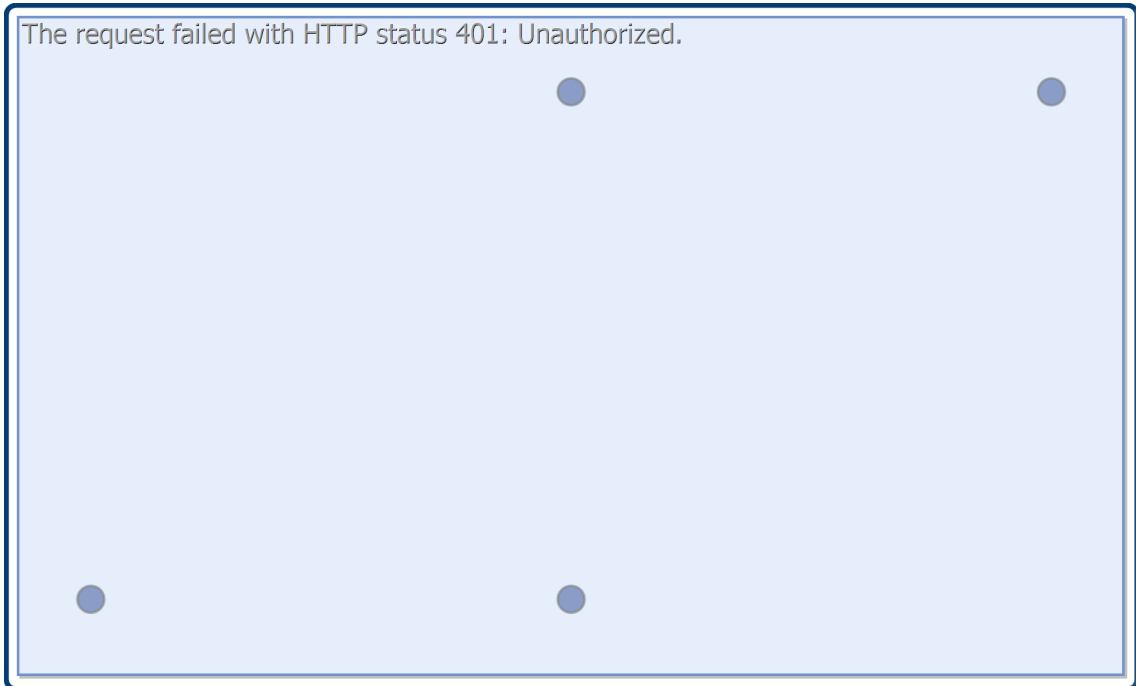
On the basis of the evidence provided above, Silverlip Pearl Oyster in Western Australia is classified as a **sustainable stock**.

BIOLOGY

Silverlip Pearl Oyster biology [Hart and Joll 2006]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Silverlip Pearl Oyster	30 years, 250 mm DVM	Males: 2–3 years, 110 mm DVM Females: 7–8 years, 175 mm DVM

DISTRIBUTION



Distribution of reported commercial catch of Silverlip Pearl Oyster

TABLES

Fishing methods	Queensland	Western Australia
Commercial		
Diving	✓	✓
Recreational		
Diving	✓	
Unspecified		✓

Management Methods	Northern Territory	Queensland	Western Australia
Commercial			
Gear restrictions	✓	✓	✓
Limited entry	✓	✓	✓
Seasonal or spatial closures		✓	
Size limit			✓

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Size limits		✓	
Spatial zoning	✓		✓
Total allowable catch	✓		✓
Vessel restrictions		✓	
Recreational			
Bag/possession limits		✓	
Gear restrictions		✓	
Seasonal or spatial closures		✓	
Size limits		✓	

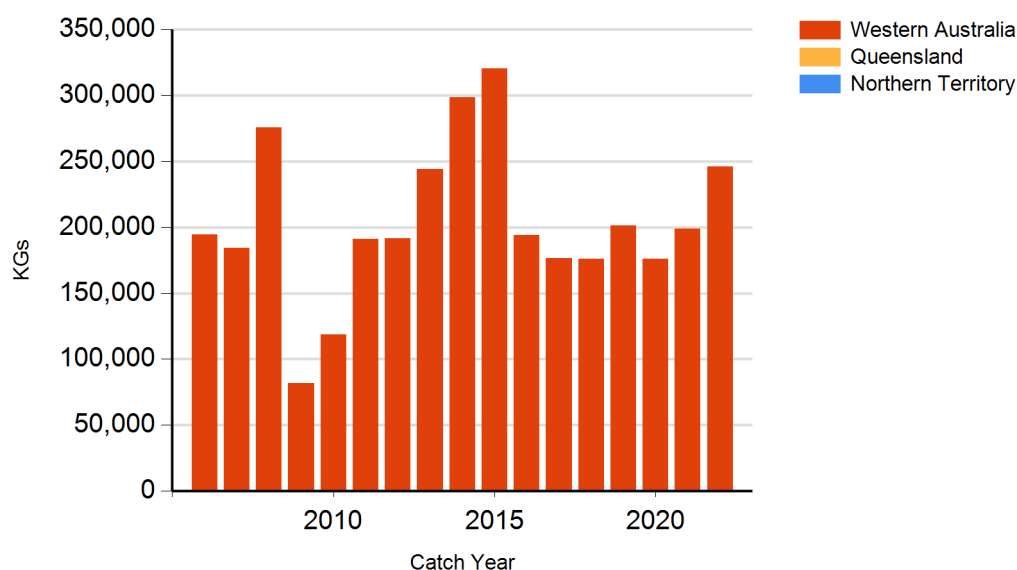
Catch			
	Northern Territory	Queensland	Western Australia
Commercial	0 t	0 t	246.131 t
Indigenous	Unknown	Unknown	Unknown
Recreational	Unknown	Unknown	No Catch

Queensland – Indigenous (Management Methods) for more information see: <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

Queensland – Commercial (Catch). Queensland commercial and charter data have been sourced from the commercial fisheries logbook program. Further information available through the Queensland Fisheries Summary Report <https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report>

CATCH CHART

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Commercial catch of Silverlip Pearl Oyster - note confidential catch not shown

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