

Silverlip Pearl Oyster (2016)

Pinctada maxima



Anthony Hart: Department of Fisheries, Western Australia, **Anthony Roelofs:** Department of Agriculture and Fisheries, Queensland, **Thor Saunders:** Department of Primary Industry and Resources, Northern Territory

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	Western Australia	POMF	Sustainable	CPUE, recruitment surveys, population surveys
Northern Territory	Northern Territory	MOPWHF	Undefined	Catch, effort
Queensland	Queensland	ECPF	Sustainable	Catch, effort

MOPWHF Mother of Pearl Wild Harvest Fishery (NT), ECPF East Coast Pearl Fishery (QLD), POMF Pearl Oyster Managed Fishery (WA)

STOCK STRUCTURE

Pinctada maxima or the Silverlip Pearl Oyster is the largest species in the pearl oyster family[1], 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[2], 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[3]. 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 Historically, large catches of Silverlip Pearl Oyster were taken from around the Northern Territory coast between 1901 and 1966. Catches peaked at 804 tonnes (t) in 1937 and the last significant catch was 339 t in 1957. Since

this time, annual catches have been extremely low, primarily due to the market for mother-of-pearl collapsing. Heavy historical fishing was considered to have caused overfishing in many areas in the Northern Territory[5]. However, surveys conducted in the 1990s found significant numbers of large, mature individuals indicating that recruitment had continued however, biomass levels at that time were unknown[5]. The recent low catches have been around 2 t (to supply niche markets) and there has been no harvest in the Northern Territory since 2008. While the current level of fishing pressure is unlikely to cause any additional reductions on the current biomass there is insufficient information available to confidently classify the status of this stock.

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

Queensland The East Coast Pearl Fishery (Queensland) is a small-scale, wild-harvest fishery that licences operators to collect live adult pearl oyster shell as broodstock for the pearl aquaculture industry. The general demand for wild-harvested pearl oysters is very low as the aquaculture industry produces the majority of its broodstock needs from its own hatcheries. 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 and there were no Silverlip Pearl Oyster collected in 2015. 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, 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 or North Coast Bioregion. 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 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 (SCPUE) increased by 200 per cent between 2003 and 2010, but has declined since 2010. In 2015, it was at its lowest level since the 2003. This large fluctuation was due to an order of magnitude variation in recruitment, which is measured using a spat settlement index (oysters aged 0+ years and 1+ years). The recruitment variability is caused by environmental variation which also affects the fishing efficiency of the pearl oyster fleet[4]. An extremely high settlement in 2005 (index = 31), compared to the mean of all other years (index = 4) dominated the SCPUE for 5 years between 2009 and 2013. Although SCPUE is now at low levels, spat settlement increased significantly between 2013 and 2015. The stock prediction model, which uses the spat settlement index data to predict future stock abundance, is forecasting an increase in SCPUE. Additional data, including population surveys, shows that breeding stock

levels are stable. On the basis of this evidence, the biomass of the Western Australian pearl oyster fishery is unlikely to be recruitment overfished.

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[6]

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

DISTRIBUTION



Distribution of reported commercial catch of Silverlip Pearl Oyster

TABLES

Commercial Catch Methods	Northern Territory	Queensland	Western Australia
Diving	✓	✓	✓

Fishing methods	Northern Territory	Queensland	Western Australia
Commercial			
Diving	✓	✓	✓

Indigenous			
Diving	✓	✓	✓
Recreational			
Diving		✓	

Management Methods			
	Northern Territory	Queensland	Western Australia
Commercial			
Gear restrictions	✓	✓	✓
Limited entry	✓	✓	✓
Size limit		✓	✓
Spatial closures		✓	
Spatial zoning	✓		✓
Total allowable catch	✓		✓

Active Vessels	
	Western Australia
	6 License in POMF,

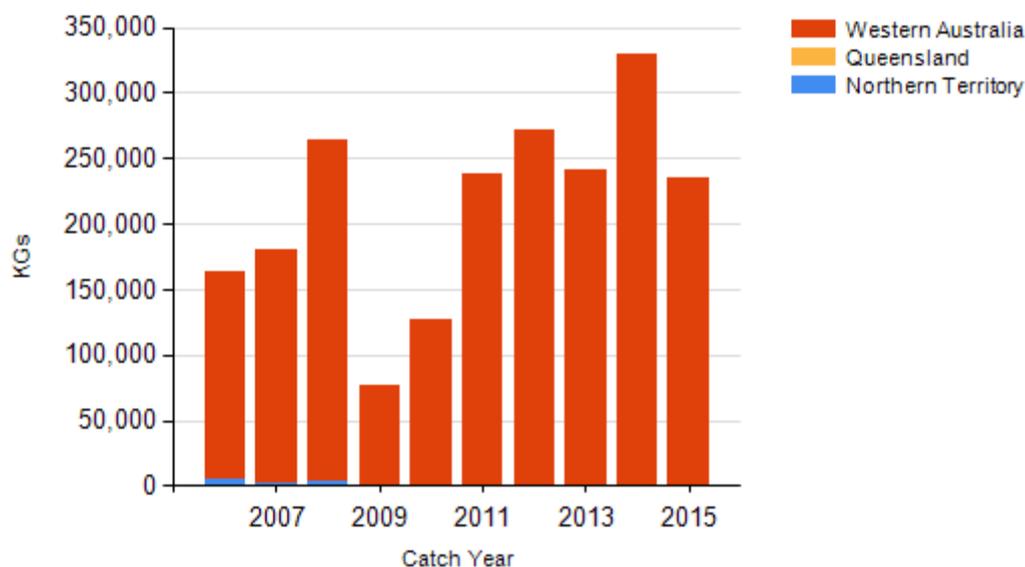
POMF Pearl Oyster Managed Fishery(WA)

Catch			
	Northern Territory	Queensland	Western Australia
Commercial			234.431t in POMF,
Indigenous	Unknown	Unknown	Unknown
Recreational	Unknown	Unknown	NA

MOPWHF Mother of Pearl Wild Harvest Fishery (NT), ECPF East Coast Pearl Fishery (QLD), POMF Pearl Oyster Managed Fishery (WA),

a. Queensland – Indigenous (management methods) In Queensland, under the Fisheries Act 1994 (Qld), Indigenous fishers are able 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.

CATCH CHART



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

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Pearl oyster fishing removes only a small proportion of the biomass of pearl oysters on the fishing grounds and is considered to have negligible impact on the food chain in the fishing area. Pearl divers have minimal contact with the habitat during fishing operations and the main habitat contact is by pearl oysters held in mesh panels on holding sites following capture. However, these sites cover a very small proportion of the habitat and the activity concerned is unlikely to cause any lasting effect.

ENVIRONMENTAL EFFECTS on Silverlip Pearl Oyster

- Environment plays an important role in population variability in the Silverlip Pearl Oyster. In Western Australia, the effect of sea surface temperature, wind direction and rainfall have shown to be influential in determining the settlement density of young-of-the-year (0+ years) pearl oysters[4]. Other studies on pearl oysters, for example the Black-lipped Pearl Oyster, also highlight the close relationship between exceptional year classes and environment[7].

References	
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