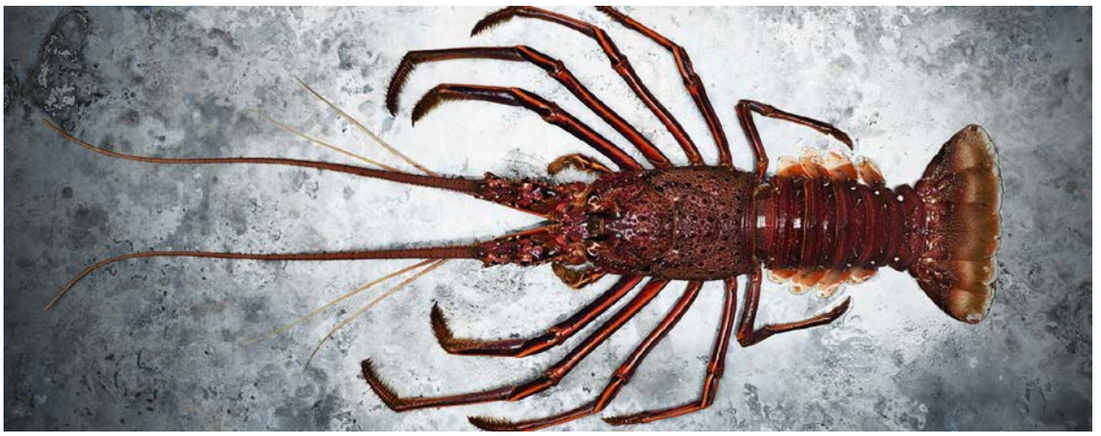
Western Rock Lobster (2016)

Panulirus cygnus



Simon de Lestang: Department of Fisheries, Western Australia

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Western Australia	West Coast Rock Lobster Managed Fishery	WCRLMF	Sustainable	Catches, catch rate, recruitment, egg production and harvest rate

WCRLMF West Coast Rock Lobster Managed Fishery (WA)

STOCK STRUCTURE

Western Rock Lobster is a single biological stock, with a distribution along the mid–lower west coast of Western Australia[1,2].

Here, assessment of stock status is presented at the biological stock level—West Coast Rock Lobster Managed Fishery (Western Australia).

STOCK STATUS

West Coast Rock Lobster Managed Fishery

The stock status for Western Rock Lobster (*Panulirus cygnus*) is determined using a weight of evidence approach based on empirical and modelled estimates of a range of indices, including catches, catch rates, recruitment, egg production and harvest rate[3].

The most recent assessment shows that catches in the West Coast Rock Lobster Managed Fishery (Western Australia) have increased slightly over the past few seasons due to small increases in quota and an increase in recreational catch however, they remain 55 per cent lower than the historical average level of catch. Standardised commercial catch rates indicate that biomass has increased in recent years and is now over three-times greater than under input controls. Under current exploitation rates, catch rates are predicted to remain stable or increase. The Integrated Population Model (IPM) indicates that catch rates in all locations of the fishery will continue to increase with a continuation of fishing at similar or slightly higher total allowable commercial catches (TACCs) than in the

recent past.

Puerulus (post-larval lobsters) monitoring indicates that the current settlement levels are slightly below the historic average. The IPM suggests that this is sufficient to maintain/increase stock abundance at current harvest levels. The IPM currently indicates that the fishery is operating at harvest rates of between 25–30 per cent and these will continue to decline at current or slightly higher TACCs. Fishery-independent egg production indices at all sites are well above long-term levels and above threshold reference levels. These indices indicate high levels of spawning stock exist throughout the fishery. The IPM indicates that the biomass and egg production in all locations of the fishery is currently at the highest levels recorded since the mid-1970s, and that a continuation of fishing at similar or slightly higher TACCs will continue to result in increasing biomass and catch rates.

The above evidence indicates that the biomass of this stock is unlikely to be recruitment overfished, and the current level of fishing pressure is unlikely to cause the stock to become recruitment overfished.

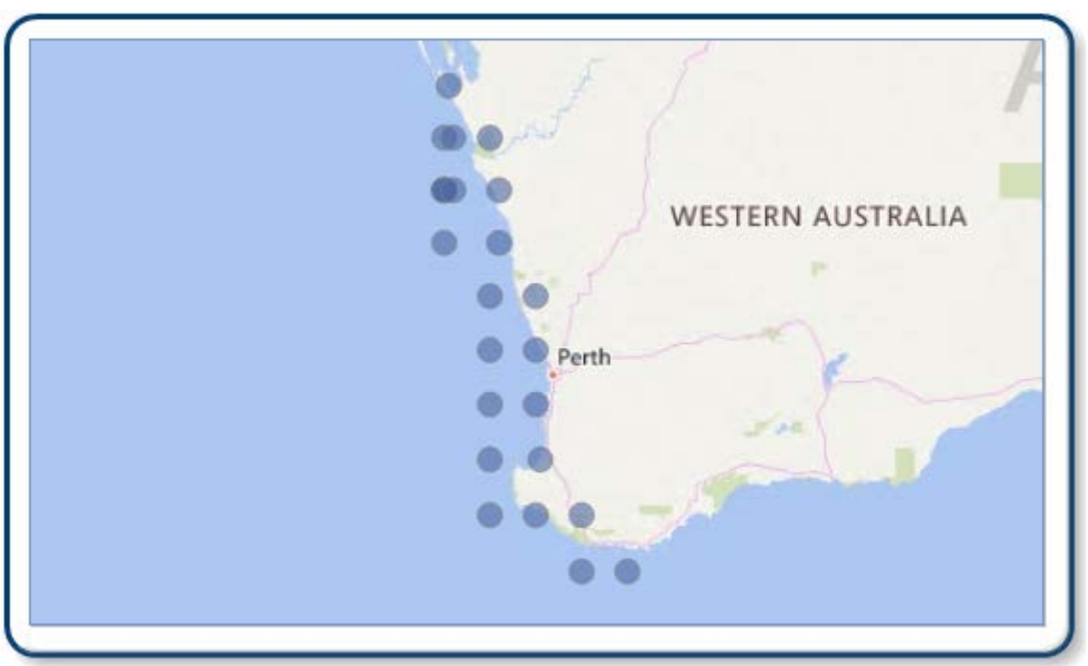
On the basis of the evidence provided above, the West Coast Rock Lobster Managed Fishery (Western Australia) biological stock is classified as a **sustainable stock**.

BIOLOGY

Western Rock Lobster biology[3]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Western Rock Lobster	20+ years; >150 mm CL	5–7years; 65–80 mm CL, depending on location

DISTRIBUTION



Distribution of reported commercial catch of Western Rock Lobster

TABLES

Commercial Catch Methods	Western Australia
Batten and beehive pots	✓

Fishing methods	
	Western Australia
Commercial	
Batten and beehive pots	✓
Indigenous	
Diving	✓
Rock Lobster And Crayfish Traps And Pots	✓
Recreational	
Diving	✓
Rock Lobster And Crayfish Traps And Pots	✓

Management Methods	
	Western Australia
Commercial	
Gear restrictions	✓
Limited entry	✓
Size limit	✓
Spatial closures	✓
Total allowable catch	✓
Indigenous	
Bag limits	✓
Gear restrictions	✓
Size limit	✓
Recreational	
Bag limits	✓

Gear restrictions	✓
Size limit	✓
Spatial closures	✓
Temporal closures	✓

Active Vessels	
	Western Australia
	237 License in WCRLMF,

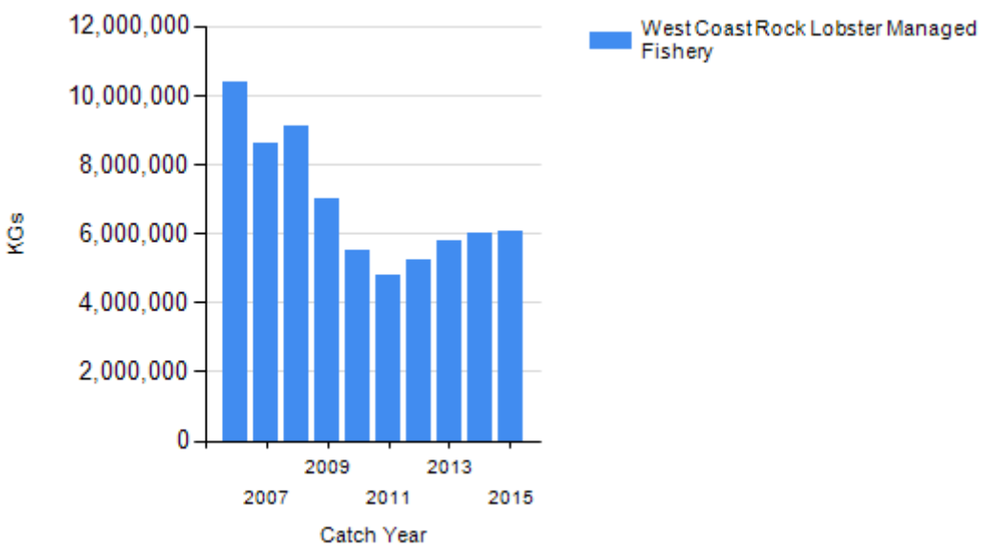
WCRLMF West Coast Rock Lobster Managed Fishery(WA)

Catch	
	Western Australia
Commercial	6050.7t in WCRLMF,
Indigenous	Unknown
Recreational	330t

WCRLMF West Coast Rock Lobster Managed Fishery (WA),

a Indigenous Subject to the defence that applies under section 211 of the Native Title Act 1993 (Cth), and the exemption from a requirement to hold a recreational fishing licence, the non-commercial take by indigenous fishers is covered by the same arrangements as that for recreational fishing.
b Western Australia – Commercial (catch) The commercial fishing season spans 15 January 2015–14 January 2016.**c Western Australia – Indigenous (catch)** The recreational fishing season spans 15 October 2014–30 June 2015.

CATCH CHART



Commercial catch of Western Rock Lobster - note confidential catch not shown

EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- The legislated design of rock lobster pots (batten and beehive), including the materials they are made from, prevents ‘ghost fishing’ problems. A study of human impacts on the marine environments of the Abrolhos Islands estimated that potting impacts less than 0.3 per cent of the surface area of fragile habitat (corals)[4]. For the coastal fishery, rock lobster fishing occurs on sand areas around robust limestone reef habitats, covered with coralline algae and macro-algae such as kelp (*Ecklonia* spp.). This type of high energy coastal habitat is regularly subjected to swell and winter storms, and so is considered highly resistant to damage from rock lobster potting. The significant recent reductions in fishing effort will have reduced these risks even further[5,6].
- The incidental capture of juvenile sea lions, recognised as a management issue by the Western Australian Department of Fisheries, has resulted in the introduction of sea lion excluder devices in high-risk areas[7]. This has reduced captures of sea lions, and no captures were recorded since their introduction in 2010.
- Entanglements between West Coast Rock Lobster Managed Fishery (Western Australia) fishing gear and migrating whales increased in recent years due to an increase in whale population and an extension in the fishing season. As a result, gear modifications were mandated in 2014 throughout the fishery during the whale migration (May−October). These modifications have significantly reduced interactions with whales by approximately 60 per cent.
- Sea lions, seals and sharks have been found to be particularly susceptible to injury or death through entanglement in uncut plastic bait bands. Historically, these bands also contribute to plastic debris washed up on shorelines. In 2012, a state-wide ban on the carriage of bait bands out to sea was implemented.
- Research monitoring of commercial bycatch occurs continuously across the fishery; no issues of concern have been identified[6].

ENVIRONMENTAL EFFECTS on Western Rock Lobster

- Annual variation in the abundance of puerulus (post-larval lobsters) has historically been associated with fluctuations in offshore water temperatures during the early larval phase; water temperatures are influenced by the strength of the Leeuwin Current and the incidence of storm fronts crossing the west coast during spring[8]. More recently, other factors, such as timing of the onset of spawning (which is affected by water temperature), have been identified as possible contributors to these variations—in particular, the 7 years of below-average settlement (2006–07 to 2012–13), including the record low settlement of 2008–09[6,9,10].
- Many aspects of the Western Rock Lobster life history, such as growth, migration, size at maturity and catchability, appear to be sensitive to changes in water temperature[11–13]. Increasing trends in long-term water temperature have co-occurred with declines in the size at maturity[13] and size at migration[11], and an increase in the proportion of female lobsters moulting out of setose in autumn[12].

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