Barred Javelin (2023)

Pomadasys kaakan

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Western Australia, Northern Territory	Northern Australia	Sustainable	Catch, indicator species status
Northern Territory, Queensland	Gulf of Carpentaria	Sustainable	Catch, Biomass, Fishing Mortality, Spatial Distribution
Queensland	East Coast Queensland	Sustainable	Catch, Biomass, Fishing Mortality, Spatial Distribution

STOCK STRUCTURE

Barred Javelin are widely distributed throughout the Indian Ocean to the western Pacific Ocean, ranging from the Red Sea and east coast of Africa through to southeast Asia, extending north to Taiwan and south to northern Australia. They have also been reported from the Persian Gulf. In Australia, Barred Javelin range from Shark Bay in Western Australia (possibly also ranges further south), north and east to at least Moreton Bay in Queensland.

Garrett (1997) assessed allozymes from Barred Javelin between locations along the eastern and western coasts of northern Queensland (Cape York). These data showed significant genetic differences between locations in the Gulf of Carpentaria and the Queensland east coast. The boundaries of these stocks and their relationship to populations along the western and northern coasts of Australia are not known. Due to the logistic and operational constraints of the relevant monitoring, assessment and management agencies, assessment is undertaken at the management unit level.

Here, assessment of stock status is presented at the management unit level—Northern

Australia (Western Australia and Northern Territory), Gulf of Carpentaria (Queensland and Northern Territory); and East Coast Queensland.

STOCK STATUS

East Coast Queensland

Barred Javelin are a popular recreational species on the Queensland east coast that can be confused with Spotted Javelin (*Pomadasys argenteus*) by fishers as both are commonly caught in Queensland. However, it is estimated that 90% of retained javelin are Barred Javelin. There are recreational possession limits in place for Barred Javelin (10 per person) and the minimum legal size of 40 cm total length (both sectors) is set above size at maturity (50%) to allow some fish to spawn before they can be legally harvested.

The recreational sector comprised approximately 80% of the total (commercial and recreational combined) harvest in 2013–14 and approximately 70% of the total harvest in 2019–20 [Webley et al. 2015; Teixeira et al. 2021]. The recreational harvest of Barred Javelin has more than halved since the 2013–14 survey, dropping from approximately 139 tonnes (t) to 59 t (estimates are for whole of Queensland across both stocks) in the 2019–2020 survey [Webley et al. 2015; Teixeira et al. 2021]. It is estimated that between 60 and 70% of recreationally caught javelin fish are released [Webley et al. 2015], although post release mortality is unknown. Commercial catch has only decreased slightly from 30 t in 2013–14 to 24 t in 2019–20, suggesting the decrease in recreational harvest is due to fisher behaviour rather than a drop in abundance. Barred Javelin are caught mainly as a by-product in the ECIF and commercial harvest in 2021–22 was 19 t, slightly below the 10-year average of 27 t (range 19–33 t; across years 2012–22).

A preliminary assessment using catch data applied to a modified catch-MSY model (developed by Martell and Froese [2013] and modified by Haddon et al. [2018]), estimated that the 2019 biomass of Barred Javelin was 76% of unfished levels [Saunders and Roelofs 2020] suggesting that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Similarly, the model estimated that the fishing mortality (0.08) in 2019 was well below the limit point.

Catch-MSY modelling has a higher degree of uncertainty and should not be solely relied on to make inferences about long-term biomass trends. However, Barred Javelin are broadly distributed beyond the effort footprint of the above fishery and occupy a range of habitats including estuaries and inshore waters suggesting the stock likely has access to refuges. Similarly, they were assessed as Least Concern by the IUCN suggesting they are likely less susceptible to overfishing [Lindeman et al. 2022]. Using a weight of evidence approach, the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, Barred Javelin on the Queensland east coast is classified as a **sustainable stock**.

Gulf of Carpentaria

Barred Javelin are accessed by commercial net and trawl fisheries in the Gulf of Carpentaria. The species is caught mainly as by-product in the net fishery when targeting Barramundi/King Threadfin [Bade 1989]. They are also a popular recreational species, especially in the Karumba region. Barred Javelin can be

misidentified by fishers as Spotted Javelin, which are less commonly caught in the Gulf of Carpentaria. It is estimated that 95% of retained javelin fish are Barred Javelin. The recreational fishery harvested more than 70% of the harvest in Queensland in 2019–20 [Webley et al. 2015; Teixeira et al. 2021]. Estimates are provided at the whole of Queensland level (i.e., across both stocks), however, data suggest that recreational catch has more than halved from the 2013–14 recreational survey to the 2019–20 survey [Webley et al. 2015; Teixeira et al. 2021].

Commercially in Queensland, Barred Javelin would have been exposed to foreign trawling activity from the 1950s to the 1980s [O'Neill et al. 2011] with commercial catches during this period probably substantially higher (greater than 70 t) than contemporary levels. Recent commercial catches in the Gulf of Carpentaria have generally been low due to reduced finfish trawling activity, averaging 13 t over the last decade to 2021–22, and estimated to be 10 t in 2021–22.

A preliminary assessment using catch data applied to a modified catch-MSY model (developed by Martell and Froese [2013] and modified by Haddon et al. [2018]), estimated that the 2019 biomass of Barred Javelin was 44% of unfished levels [Saunders and Roelofs 2020] suggesting that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Similarly, the model estimated that the fishing mortality (0.23) in 2019 was below the limit point indicating that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired. Since 2019, only small catches of Barred Javelin (less than 1 t from all sectors combined) are caught in the NT portion of this stock. They are targeted more by recreational fishers in the King Ash Bay Region [West et al. 2022].

Catch-MSY modelling has a higher degree of uncertainty and should not be solely relied on to make inferences about long-term biomass trends. However, Barred Javelin are broadly distributed beyond the effort footprint of the above fishery and occupy a range of habitats including estuaries and inshore waters suggesting the stock likely has access to refuge. Similarly, they were assessed as Least Concern by the IUCN suggesting they are likely less susceptible to overfishing [Lindeman et al. 2022]. Using a weight of evidence approach, the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the management unit is classified as a **sustainable stock.**

Northern Australia

In Western Australia, Barred Javelin are not identified to the individual species level but are landed as part of the group Javelinfishes. There is currently little evidence to determine the proportion of the Javelinfish catch by species. Javelinfishes (which include the Barred Javelin) are caught primarily as a component of the multispecies Pilbara Fish Trawl (Interim) Managed Fishery within the Pilbara Demersal Scalefish Fisheries (which also includes the Pilbara Trap Managed Fishery and the Pilbara Line Fishery) and in small quantities in the Northern Demersal Scalefish Managed Fishery (NDSMF) and Gascoyne Demersal Scalefish Managed Fishery. Javelinfishes are assessed on the basis of the status of several indicator species (including, for example, Red Emperor, Rankin Cod, and Bluespotted Emperor in the Pilbara region, and Red Emperor, and Goldband Snapper in the Kimberley region) across the North Coast Demersal Resource (NCDR) that represent the entire inshore demersal suite of species occurring at depths of 30–250 m [Newman et al. 2018]. The indicator species in the Pilbara

and Kimberley have been classified as sustainable. The level of risk associated with the sustainability of Javelinfishes in the NCDR is assessed as low. This assessment of Javelinfishes is supported by predictions for biomass and harvest rates from a data-limited Catch-MSY assessment model compared periodically to a median model prediction for maximum sustainable yield (MSY).

The total catch of Javelinfishes across WA over the last 10 years (2013–22) have ranged from 19.4–56.4 t, with a mean annual catch of 32.0 t. This is consistent with average catches across the previous 10 years of 35.8 t. The recreational and charter catch are considerably lower compared to the commercial catch, in the past 10 years where reliable catches estimates are available, the proportion of the total catch has averaged 1%. Analyses using a Catch-MSY model applied to data on annual catches for this species (1993–2022), demonstrate that the annual catches since 1993 remained at or below the median model estimate for maximum sustainable yield (MSY), with the exception of two periods in which it generally exceeded the upper 95% confidence limit for this MSY prediction (2004, 2006, 2008 and 2021). This is also consistent with the predicted values for biomass in recent years being below BMSY, and fishing mortality remaining below FMSY. However, it is important to recognise that Catch-MSY is a data-limited technique with relatively strong assumptions, dependent on user inputs. For this assessment, these included specified ranges for initial depletion (0.4–0.8), based on likely catches from foreign fleets, final depletion (0.15–0.7, calculated by the program based on recent catches relative to maximum recorded annual catch) and low resilience (r=0.1–0.6, consistent with species longevity, of approximately 15 years). Given consistent catch levels across multiple fisheries, current status of the indicator species for the NCDR, and catch in relation to Catch-MSY, it is considered unlikely that the biomass of Javelin fishes in Western Australia is depleted and recruitment is unlikely to be impaired.

In the Northern Territory, the Barred Javelin is the only species of javelin fish caught in any significant numbers. The commercial harvest has been very low (2 t; 10-year average) and primarily from the Demersal Fishery trawl sector. The recreational take for this species of approximately 3 t is also low [Matthews et al. 2019; Errity et al. 2022]. The above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

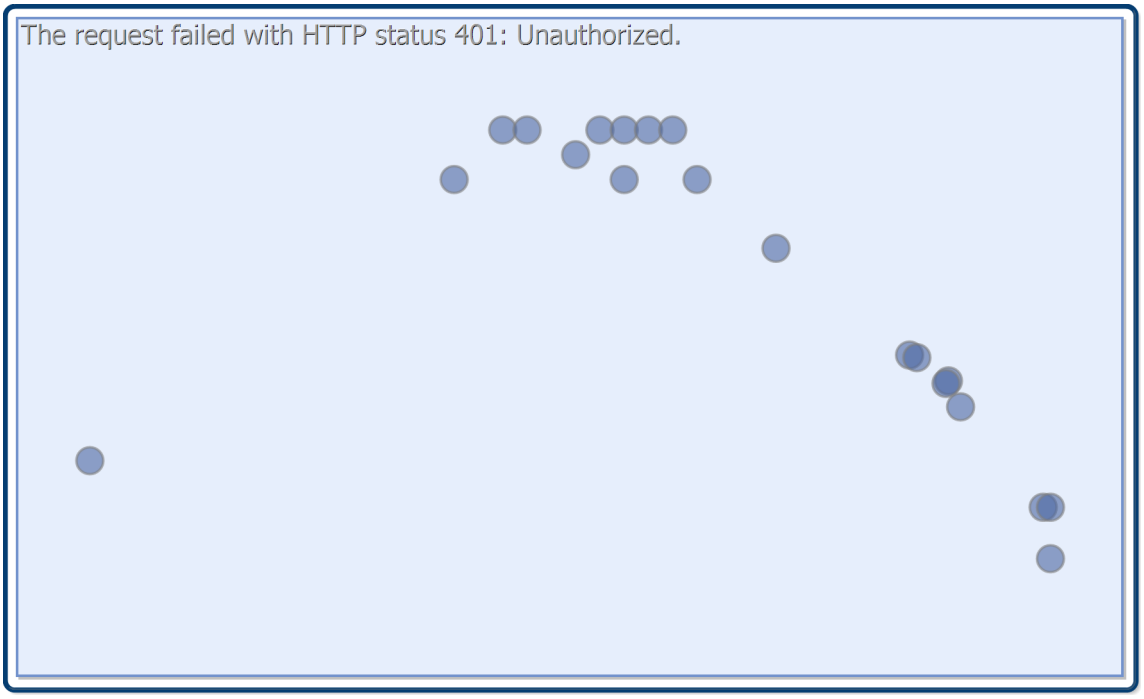
On the basis of the evidence provided above, the Northern Australian biological stock is classified as a **sustainable stock**.

BIOLOGY

Barred Javelin biology [Garnett 1997; Szczecinski 2012]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Barred Javelin	East coast Queensland: 15 years, 715 mm TL Gulf of Carpentaria: 14 years, 670 mm LCF	East coast Queensland: over 50% of fish were maturing or spawning by 280–319 mm TL. Gulf of Carpentaria: 463 mm LCF for females at L50

DISTRIBUTION



Distribution of reported commercial catch of Barred Javelin- note confidential catch not shown.

TABLES

Fishing methods			
	Northern Territory	Queensland	Western Australia
Charter			
Handline			✓
Hook and Line	✓	✓	
Rod and reel			✓
Various			✓
Commercial			
Hand Line, Hand Reel or Powered Reels			✓
Line		✓	
Midwater Trawl		✓	
Net		✓	
Unspecified	✓		
Recreational			
Barrier Net	✓		
Handline			✓

Hook and Line	✓	✓	
Rod and reel			✓

Management Methods			
	Northern Territory	Queensland	Western Australia
Charter			
Bag limits			✓
Bag/possession limits		✓	
Gear restrictions		✓	
Limited entry			✓
Passenger restrictions			✓
Seasonal or spatial closures		✓	
Size limits		✓	
Spatial closures			✓
Spatial zoning			✓
Commercial			
Bag and boat limits	✓		
Effort limits			✓
Gear restrictions		✓	
Harvest Strategy		✓	
Limited entry		✓	
Seasonal or spatial closures		✓	
Size limits		✓	
Spatial zoning			✓
Total allowable effort			✓
Vessel restrictions		✓	

Recreational			
Area restrictions	✓		
Bag/possession limits		✓	
Gear restrictions		✓	
Licence (Recreational Fishing from Boat License)			✓
Seasonal or spatial closures		✓	
Size limits		✓	

Catch			
	Northern Territory	Queensland	Western Australia
Charter	2.9 t	Unknown	<1 t
Commercial	1.009 t	28.2518 t	0 t
Indigenous	Unknown	Unknown	Unknown
Recreational	2.7 t (2017)	59 t (2019–20)	<1 t (2020–21)

Queensland – Indigenous (management methods). For more information see: https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing

Queensland – Recreational Fishing (Catch). Data are based at the whole of Queensland level and derived from statewide recreational fishing surveys. Where possible, estimates have been converted to weight (tonnes) using best known conversion multipliers. Conversion factors may display regional or temporal variability. In the absence of an adequate conversion factor, data presented as number of fish.

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

Queensland – Commercial (Management Methods). Harvest strategies are available at: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy

Western Australia – Recreational (Catch). Boat-based recreational catch is from 1 September 2020–31 August 2021. These data are derived from those reported in [Ryan et al. 2022].

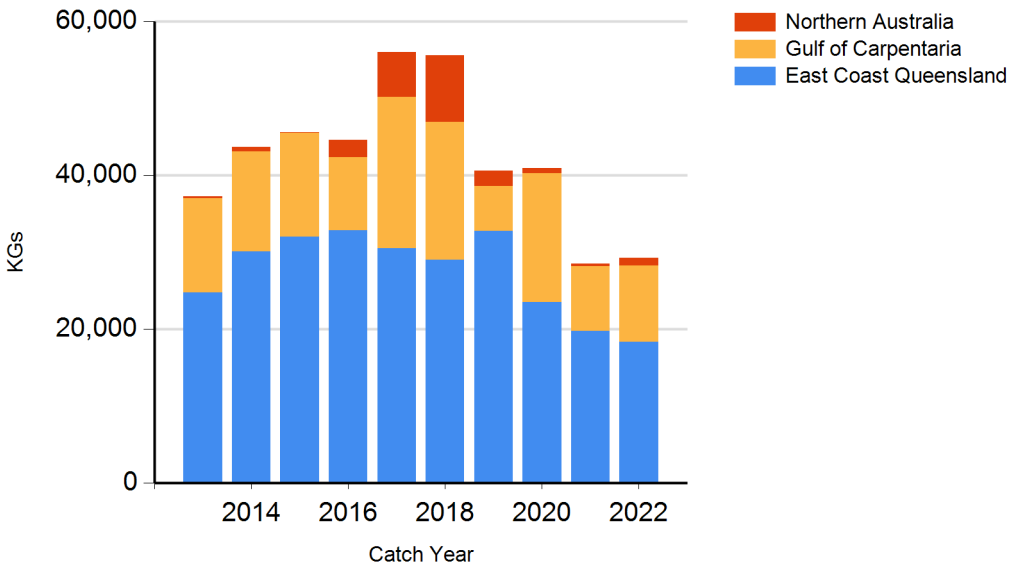
Western Australia – Recreational (management methods). A Recreational Fishing from Boat License is required for the use of a powered boat to fish or to transport catch or fishing gear to or from a land-based fishing location.

Western Australia – Indigenous (management methods). Subject to application of 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.

Northern Territory - Indigenous (management methods).

The Fisheries Act 1988 (NT), specifies that: “Unless expressly provided otherwise, nothing in this Act derogates or limits the right of Aboriginal people who have traditionally used the resources of an area of land or water in a traditional manner to continue to use those resources in that area in that manner.”

CATCH CHART



Commercial catch of Barred Javelin- note confidential catch not shown.

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