# Black Jewfish (2016)

*Protonibea diacanthus*

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## STOCK STATUS OVERVIEW

| Jurisdiction | Stock | Fisheries | Stock status | Indicators |
|---|---|---|---|---|
| Western Australia | Western Australia | KGBMF, PLF, WANCSF, PTMF, PFTIMF | Sustainable | Catch |
| Northern Territory | Northern Territory | BF, CLF, DF, FTO, ONLF, TRF | Overfished | Biomass, egg production |
| Queensland | Gulf of Carpentaria | GOCIFFF | Undefined | Catch |
| Queensland | Queensland East Coast | ECIFFF | Undefined | Catch |

BF Barramundi Fishery (NT), CLF Coastal Line Fishery (NT), DF Demersal Fishery (NT), FTO Fishery Tour Operator (NT), ONLF Offshore Net and Line Fishery (NT), TRF Timor Reef Fishery (NT), ECIFFF East Coast Inshore Fin Fish Fishery (QLD), GOCIFFF Gulf of Carpentaria Inshore Fin Fish Fishery (QLD), KGBMF Kimberley Gillnet and Barramundi ManagedFishery (WA), PLF Pilbara Line Fishery (WA), WANCSF, PTMF, PFTIMF WA North Coast Shark Fishery, Pilbara Trap Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery (WA)

## STOCK STRUCTURE

Black Jewfish is a widespread Indo-Pacific species found from the Pilbara and Kimberley regions in Western Australia, across Northern Australia, to the east coast of Queensland. The stock structure for this species has been investigated in the north western part of its range from the western Gulf of Carpentaria to its southern extent along the west Australian coastline[1]. The results indicated that separate stocks exist at the scale of 10s of km[1].

However, given the recent nature of these findings, here assessment of stock status is presented at the jurisdictional level—Western Australia, Northern Territory; and at the management unit level—Gulf of Carpentaria (Queensland) and Queensland east coast.

## STOCK STATUS

**Gulf of Carpentaria**

In the Gulf of Carpentaria (Queensland) management unit, Black Jewfish are taken by commercial net fishers and recreational anglers. Commercial catches of Black Jewfish in the Queensland Gulf of Carpentaria Inshore Fin Fish Fishery have decreased from a reported historical high of 33 t in 1990 to less than 0.5 t since 2006[7]. However, specific reporting of Black Jewfish commercial harvest ceased in 2006, and catches reported as 'Jewfish—Other' have averaged 6 t per year since this change; Black Jewfish are likely the major component of this harvest. From 1999–2000, there was a distinct lack of large mature fish found in the north Cape York region[8]. The overall downward trend in catches and the reduced spawning biomass, combined with the vulnerable biology of Black Jewfish (late maturing, aggregating to spawn), resulted in a 2-year ban on fishing for Black Jewfish in key aggregation areas. In 2002, Queensland prohibited the harvest of Black Jewfish in the north Cape York region (north of Crab Island)[7]. No studies have been undertaken to measure recovery in this region or the overall biomass of Black Jewfish in the Queensland part of the Gulf of Carpentaria.

There are no reliable estimates of recreational harvest for Black Jewfish in the Queensland Gulf of Carpentaria[7], but it is known as a popular recreational species in the region. The Queensland legal size limit (600 mm total length) in the Gulf of Carpentaria is well below the reported age of first maturity for females (850–900 mm total length) and may not be effective in protecting spawning females from fishing. A conservative possession limit (two fish) reduces recreational fishing pressure on the stock. There is insufficient information available to confidently classify the status of the stock.

On the basis of the evidence provided above, the Gulf of Carpentaria (Queensland) management unit is classified as an **undefined stock**.

**Northern Territory**

The most recent assessment[3] estimates that the biomass and egg production was 28 per cent of unfished levels (1973). The model used was an update of the 2011 Stock Reduction Analysis model[4] including data up until 2014. The outputs indicated that there was a high probability (98 per cent) that Black Jewfish stocks have been overfished and that overfishing is still occurring (80 per cent). Given the recent new information on the stock structure of this species, it is likely that the assessment incorporates several populations. As the model is driven by the populations that receive the highest harvest rates in the Northern Territory the assigned status can be assumed to be representative of the highest level of exploitation that occurs on any population. The immediate area of concern is in waters around Darwin where most of the fishing pressure occurs[3]. The fisheries accessing these exploited stocks are those that operate inshore including the Coastal Line Fishery, Barramundi Fishery, fishing tour operators and recreational fishers. Black Jewfish have also been shown to be highly susceptible to barotrauma when caught in waters deeper than ten metres[5,6]. Management in the form of catch limits and area closures have been put in place to reduce harvest rates by the necessary 20 per cent to allow for the biomass of Black Jewfish stocks to recover[4]. The stock is considered to be recruitment overfished. This reduction in fishing pressure is expected to allow the stock to recover from its recruitment overfished state; however measurable improvements in biomass are yet to be detected.

On the basis of the evidence provided above, Black Jewfish in the Northern Territory is classified as an **overfished stock**.

**Queensland East Coast**

Black Jewfish are taken by commercial net fishers and recreational anglers on the Queensland east coast. The East Coast Inshore Fin Fish Fishery (Queensland) contributes minimal quantities (5-year average of around

2 t per year) to the overall Queensland east coast harvest. There are no reliable estimates of recreational harvest[9]. The legal size limit (750 mm total length) is below the reported age of first maturity for females and may not be effective in protecting spawning females from fishing. A conservative possession limit (two fish) reduces recreational fishing pressure on the stock. There is insufficient information available to confidently classify the status of the stock.

On the basis of the evidence provided above, the Queensland east coast management unit is classified as an **undefined stock**.

**Western Australia**

Black Jewfish are not a target species in the Kimberley Gillnet and Barramundi Managed Fishery of Western Australia, but are landed in small quantities as by-product[2]. They have also been landed in very small quantities as by-product in the Pilbara Fish Trawl Interim Managed Fishery and the Pilbara Line Fishery. The total commercial catch in Western Australia in 2015 was approximately 1 tonne (t). Black Jewfish catches have only been reported from a small area of their range in Western Australia. They are landed by charter fishers, primarily in the Kimberley region of Western Australia, in small quantities. Given the low level of take, the biomass of Black Jewfish in Western Australia is unlikely to be recruitment overfished and the current fishing pressure is unlikely to cause the stock to become recruitment overfished.

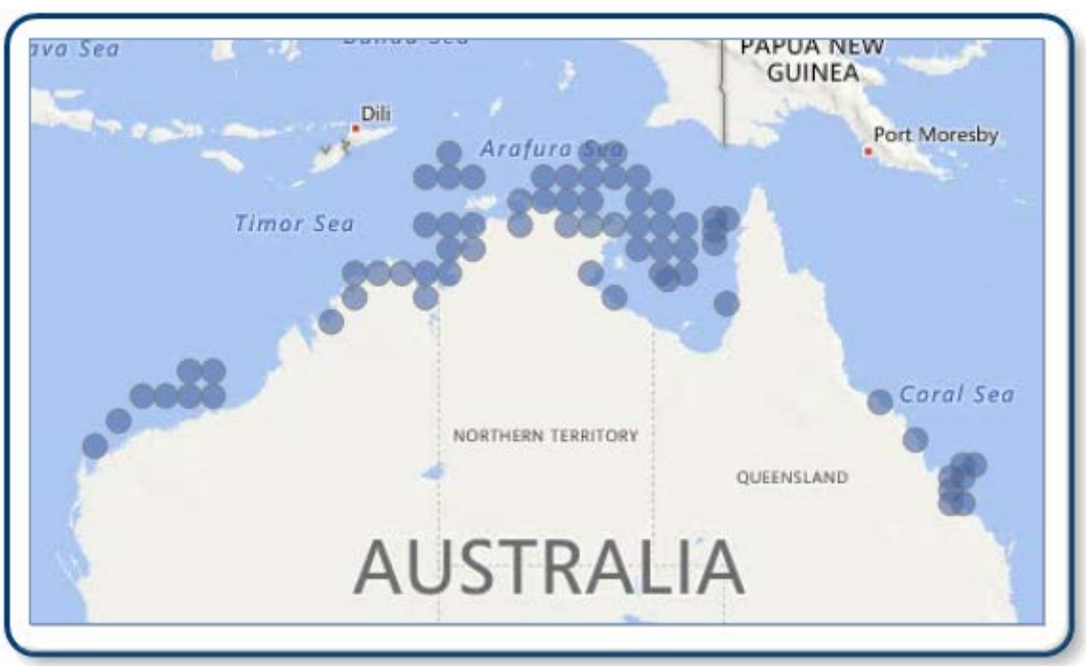
On the basis of the evidence provided above, Black Jewfish in Western Australia is classified as a **sustainable stock**.

## BIOLOGY

Black Jewfish biology[6,8]

| Species | Longevity / Maximum Size | Maturity (50 per cent) |
|---|---|---|
| Black Jewfish | 15 years; 1 500 mm TL, 30 kg | Northern Territory: 890 mm TL (2 years) |

## DISTRIBUTION



Distribution of reported commercial catch of Black Jewfish

**TABLES**

| Commercial Catch Methods | Northern Territory | Queensland | Western Australia |
|---|---|---|---|
| Gillnet | ✓ | ✓ | |
| Line | ✓ | | |
| Otter Trawl | ✓ | | |
| Traps and Pots | ✓ | | |
| Unspecified | ✓ | | |
| Various | | | ✓ |

| Fishing methods | | | |
|---|---|---|---|
| | Northern Territory | Queensland | Western Australia |
| **Commercial** | | | |
| Gillnet | ✓ | ✓ | |
| Line | ✓ | | |
| Otter Trawl | ✓ | | |
| Traps and Pots | ✓ | | |
| Various | | | ✓ |
| **Indigenous** | | | |
| Hand Line, Hand Reel or Powered Reels | ✓ | ✓ | |
| **Recreational** | | | |
| Hand Line, Hand Reel or Powered Reels | ✓ | ✓ | ✓ |
| Spearfishing | ✓ | ✓ | |
| Unspecified | ✓ | | |

| Management Methods | | | |
|---|---|---|---|
| | Northern Territory | Queensland | Western Australia |
| **Commercial** | | | |
| Catch limits | ✓ | ✓ | |
| Gear restrictions | ✓ | ✓ | ✓ |
| Limited entry | ✓ | ✓ | ✓ |
| Size limit | | ✓ | ✓ |
| Spatial | ✓ | ✓ | ✓ |

| | | | |
|---|---|---|---|
| closures | | | |
| Spatial zoning | | | ✓ |
| Temporal closures | | ✓ | ✓ |
| Vessel restrictions | ✓ | ✓ | ✓ |
| **Indigenous** | | | |
| Gear restrictions | | ✓ | |
| **Recreational** | | | |
| Bag limits | | | ✓ |
| Gear restrictions | ✓ | ✓ | ✓ |
| Licence | | | ✓ |
| Limited entry | ✓ | | ✓ |
| Passenger restrictions | ✓ | | ✓ |
| Possession limit | ✓ | ✓ | ✓ |
| Size limit | | ✓ | ✓ |
| Spatial closures | ✓ | ✓ | ✓ |
| Spatial zoning | | | ✓ |

| Active Vessels | | | |
|---|---|---|---|
| | Northern Territory | Queensland | Western Australia |
| | 14 Vessel in BF, 9 Vessel in CLF, 9 Vessel in DF, 10 Vessel in ONLF, 8 Vessel in TRF, | 7 Vessel in ECIFFF, 2 Vessel in GOCIFFF, | 4 Vessel in KGBMF, 6 Vessel in PLF, |

**KGBMF** Kimberley Gillnet and Barramundi ManagedFishery(WA)

**PLF** Pilbara Line Fishery(WA)

**BF** Barramundi Fishery(NT)

**CLF** Coastal Line Fishery(NT)

**DF** Demersal Fishery(NT)

**ONLF** Offshore Net and Line Fishery(NT)

**TRF** Timor Reef Fishery(NT)

**ECIFFF** East Coast Inshore Fin Fish Fishery(QLD)

**GOCIFFF** Gulf of Carpentaria Inshore Fin Fish Fishery(QLD)

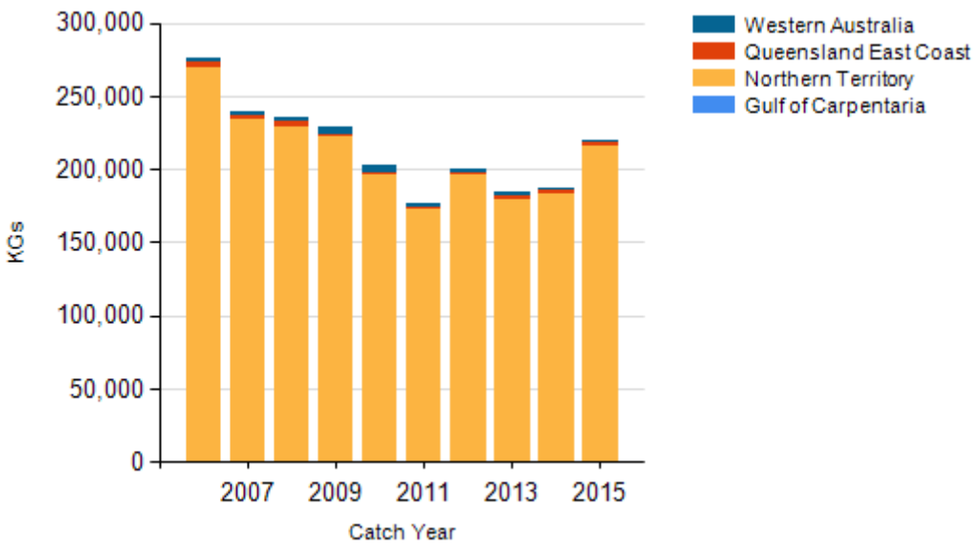
| Catch | | | |
|---|---|---|---|
| | Northern Territory | Queensland | Western Australia |
| **Commercial** | 3.11111t in BF. | 1.9166t in | 1.376t in |

| | | | |
|---|---|---|---|
| | 173.176t in CLF, 11.25t in DF, 28.119t in FTO, 0.077t in ONLF, 0.579t in TRF, | ECIFFF, 0.0432t in GOCIFFF, | KGBMF, 0.015t in PLF, 0.3965t in WANCSF, PTMF, PFTIMF, |
| **Indigenous** | Unknown | Unknown | Unknown |
| **Recreational** | 28 t in FTO | Unknown | <0.5 t |

BF Barramundi Fishery (NT), CLF Coastal Line Fishery (NT), DF Demersal Fishery (NT), FTO Fishery Tour Operator (NT), ONLF Offshore Net and Line Fishery (NT), TRF Timor Reef Fishery (NT), ECIFFF East Coast Inshore Fin Fish Fishery (QLD), GOCIFFF Gulf of Carpentaria Inshore Fin Fish Fishery (QLD), KGBMF Kimberley Gillnet and Barramundi ManagedFishery (WA), PLF Pilbara Line Fishery (WA), WANCSF, PTMF, PFTIMF WA North Coast Shark Fishery, Pilbara Trap Managed Fishery, Pilbara Fish Trawl (Interim) Managed Fishery (WA),

**a Queensland – Indigenous** 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.
**b Western Australia – Recreational (catch)** Boat-based recreational catch from 1 May 2013–30 April 2014.

## CATCH CHART




Commercial catch of Black Jewfish - note confidential catch not shown

## EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Black Jewfish are mainly targeted by fishers in all sectors using handlines and rods. Beyond the removal of target and a small proportion of bycatch species, there is little evidence to suggest that this gear significantly impacts on benthic or pelagic ecological communities.
- In Queensland, coastal river and estuary set gillnets have been shown to have minimal impact on the environment and are quite selective in their harvest[10]. Bycatch is generally low when compared to the harvest of the target species.
- Commercial trawl gear used in waters across northern Australia has the potential to impact on the benthic habitat. However, finfish trawl nets have been designed to fish above the seabed, reducing interaction with benthic habitats[11]. Additionally, the trawl fishery across northern Australian waters comprises a very small fleet and only fishes

approximately seven per cent of the available area[11].

**ENVIRONMENTAL EFFECTS on Black Jewfish**

- The impact of environmental factors on Black Jewfish is largely unknown. However, juveniles mainly inhabit coastal estuaries and bays, making these phases of their lifecycle sensitive to ocean current strength and direction, rainfall and river flow and water temperature, salinity and acidity[3].

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| | |
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