

Nickol Bay Prawn Managed Fishery Status Report

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FISHERY DESCRIPTION

The Nickol Bay Prawn Managed Fishery (NBPF) operates along the western part of the North West Shelf and targets banana prawns (*Penaeus merguensis*), western king prawns (*Penaeus latisulcatus*), brown tiger prawns (*Penaeus esculentus*) and endeavour prawns (*Metapenaeus* spp.) using otter trawl.

Governing legislation/fishing authority

Nickol Bay Prawn Fishery Management Plan 1991
Nickol Bay Prawn Managed Fishery Licence

Consultation process

Department–industry meetings

Boundaries and access

The boundaries of this fishery are 'all the waters of the Indian Ocean and Nickol Bay between 116°45' east longitude and 120° east longitude on the landward side of the 200 m isobath' (Onslow/Nickol Bay Prawn Figure 1).

Management arrangements

Management controls for the Nickol Bay Prawn Managed Fishery are based on limited entry, seasonal and area closures, gear controls and restrictions on boat size. Different areas within the fishery have different season dates allowing access to target species at appropriate times.

During the 2003 season the major fishing areas were open during the following periods:

Nickol Bay Nursery	1 May – 31 August
Extended Nickol Bay Nursery	1 May – 15 November
Depuch Nursery	1 May – 31 August
De Grey Nursery	1 May – 15 November

The management system involves a total allowable effort arrangement where all boats have an equal allocation of headrope length. The fleet is composed of trawlers up to 23 m which operate twin or quad-rigged (four nets) otter trawls to a maximum headrope length of 16 fathoms (29.27m).

Bycatch reduction devices (grids) were fully implemented in the fishery in the 2003 season, with vessels required to have BRDs fitted to both nets. In addition, the vessel monitoring system has been in operation in the fishery since 2002.

Research summary

Research for the management of this small fishery involves stock monitoring and assessment utilising monthly return data provided by industry, information from boat skippers, and rainfall records. Stock assessment of the banana prawn stocks involves updating the catch–rainfall relationship. Research outcomes are reviewed at annual industry meetings which consider the status of the stocks and recommend changes to fishing operations.

RETAINED SPECIES

Commercial production (season 2003): 248 tonnes

Landings

The total landings of major penaeids for the 2003 season were 248 t, comprising 165 t of banana prawns, 59 t of king prawns, 21 t of tiger prawns and 2 t of endeavour prawns (Nickol Bay Prawn Figure 2). The total catch was within the acceptable catch range for this fishery.

The catch of banana prawns in 2003 was much higher than the projected catch range of 40–80 t (but within the acceptable catch range) and indicates that at lower rainfall levels, other factors as well may influence banana prawn catches. King, tiger and endeavour prawn catches were all within the acceptable ranges for these species.

Recorded by-product species for 2003 were 21 t of coral prawns, 5 t of bugs (*Thenus orientalis*), 2 t of shark, 1 t each of squid and mixed fish species and less than 1 t each of black tiger prawns (*Penaeus monodon*) and blue swimmer crabs (*Portunus pelagicus*).

Fishing effort/access level

There were 14 boats licensed to trawl for prawns in Nickol Bay during 2003, with all 14 boats fishing during the season.

During 2003, 725 days of fishing was recorded by boats licensed to fish in the Nickol Bay prawn fishery, compared to 647 days in 2002 and 289 in 2001.

Catch rate

Not assessed.

Recreational component: Nil

Stock assessment complete: Yes

A broad relationship exists between the summer rainfall (December–March) and the catch of banana prawns in the following season (April–July). This relationship is assessed annually (Nickol Bay Prawn Figure 3).

Exploitation status: Fully exploited

Breeding stock levels: Adequate

Projected catch next season (2004):
Banana prawns 250–370 tonnes

The catch projection for banana prawns, based on the 425 mm of rain during the 2003/04 summer period, is between 250 t and 370 t (Nickol Bay Prawn Figure 3).

NON-RETAINED SPECIES

Bycatch species impact: Low

The Nickol Bay prawn fishery operates predominantly by specifically targeting schools of banana prawns. This results in relatively low effort and minimal bycatch compared with other trawl fisheries. In 2003, only 5% of the total Nickol Bay prawn fishery area was fished. The introduction of fish escapement devices within the nets by 2004/05 should reduce this risk even further.

North Coast Bioregion

Protected species interaction:

Negligible

The Nickol Bay prawn fishery has on rare occasions previously caught turtles and sea snakes, but the very low effort levels and targeted coverage of the fishery suggest that such interactions would not have been significant. Bycatch reduction devices (grids) are now fully implemented in the fishery, minimising the capture of large animals including turtles.

banana prawn catch has exceeded 400 t following extreme cyclonic rainfall on three occasions over the past 35 years and the predicted catch for 2004 may exceed the acceptable catch range based on historical catches due to high rainfall events in early 2004.

New management initiatives (2003/04)

The Australian Government Department of Environment and Heritage is currently considering an application to certify the Nickol Bay Prawn Managed Fishery as environmentally sustainable under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999*.

ECOSYSTEM EFFECTS

Food chain effects:

Low

In view of the highly variable nature of banana prawn recruitment, positively related to cyclonic rainfall, any food chain impacts from fishing are likely to be minimal despite the relatively high annual exploitation rate.

Habitat effects:

Low

The small fleet fishes on a limited number of discrete fishing grounds, making up approximately 5% of the coastal habitat within the fishery. Habitat types on the trawl areas associated with banana and king prawns are mud and sand respectively, which are not impacted significantly by trawl gear.

EXTERNAL FACTORS

The majority of boats in the prawn fleet of Nickol Bay are also licensed to trawl for finfish stocks offshore in the Pilbara Fish Trawl (Interim) Managed Fishery (PFTF). Some are also licensed to fish for prawns in the Kimberley Prawn Managed Fishery. As such, the fishing effort in the Nickol Bay Prawn Managed Fishery is also affected by management measures imposed elsewhere, and the catch rates available in these other fisheries. Fishing for finfish has encouraged the construction of larger boats with greater fishing power than would otherwise have been supported by fishing prawns alone. However, in recent years, concern about over-exploitation in the PFTF has led to time quotas and other restrictions. The impact of these restrictions has forced some of these larger fishing vessels to return to the NBPF and other fisheries for which they have licences, leading to variable effort in the fishery.

SOCIAL EFFECTS

Estimated employment for year 2003 was 20–30 skippers and crew, with up to 20 people involved in onshore processing in the region.

ECONOMIC EFFECTS

Estimated annual value (to fishers) for year 2003:
\$2.9 million

Ex-vessel prices for prawns vary depending on the grade of the product and the market forces operating at any one time. Generally, average prices received by vessels fishing along the Pilbara coast in 2003 were as follows:

Banana prawns	\$11.00/kg
King prawns	\$13.20/kg
Tiger prawns	\$12.70/kg
Endeavour prawns	\$7.00/kg
Coral prawns	\$2.50/kg

FISHERY GOVERNANCE

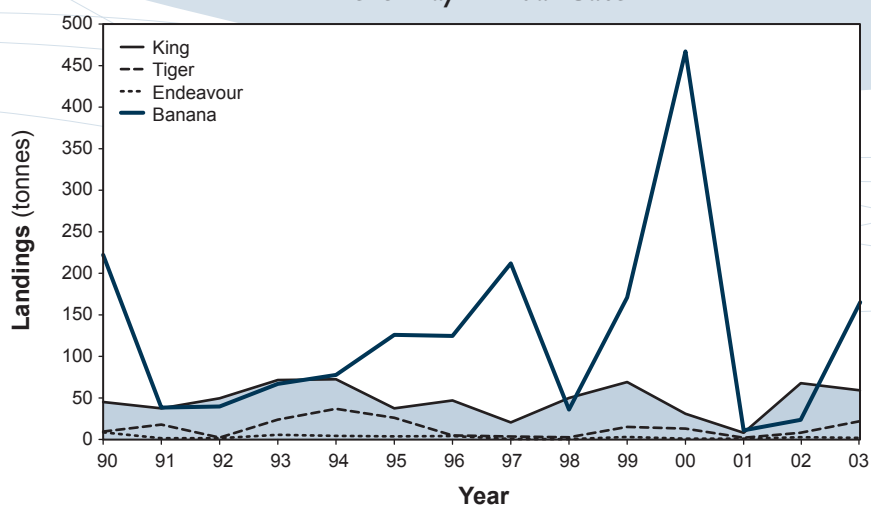
Acceptable catch range for next season: 90–300 tonnes

Under current effort levels and previous environmental conditions, the acceptable ranges of prawn catches, based on the catches of the 1990s, are as follows:

Banana prawns	40–220 t
King prawns	20–70 t
Tiger prawns	2–40 t
Endeavour prawns	1–10 t

Note the overall acceptable range for all species combined is different from the aggregate of the individual species ranges shown because the environmental circumstances that benefit banana prawns generally result in decreased catches of the other species in the same year. It should also be noted that the

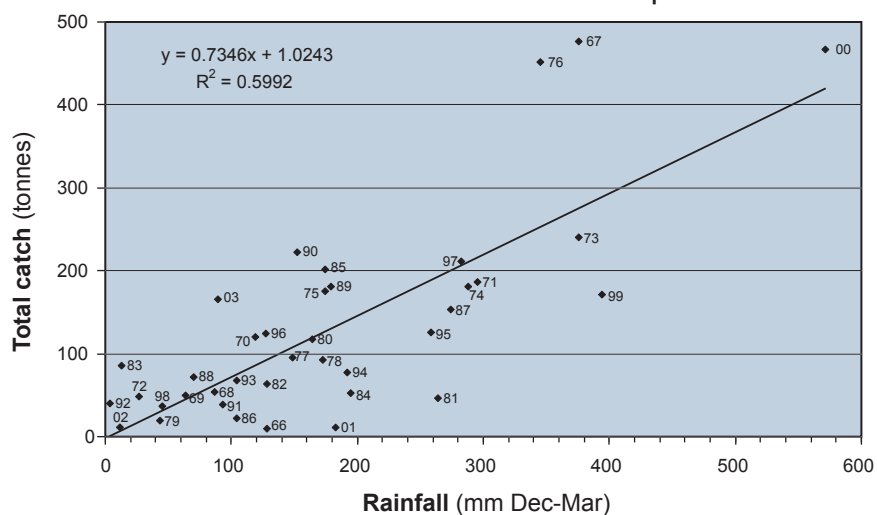
Nickol Bay Annual Catch



NICKOL BAY PRAWN FIGURE 2

Annual landings for the Nickol Bay Prawn Managed Fishery, 1990–2003.

Catch – Rainfall Relationship



NICKOL BAY PRAWN FIGURE 3

Relationship between banana prawn landings and rainfall between December and March for the years 1966–2003.