



Northern Prawn Fishery

Data Summary 2011

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2011

NORTHERN PRAWN FISHERY DATA SUMMARY 2011

NPF INDUSTRY PTY LTD on behalf of Australian Fisheries Management Authority
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Northern Prawn Fishery Data Summary 2011
March 2012

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73 Northbourne Ave
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ISBN 978-1-877044-44-1

This report should be cited as: Barwick, M. (2012). Northern Prawn Fishery Data Summary 2012. NPF Industry Pty Ltd, Australia.

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Published by the Australian Fisheries Management Authority

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NORTHERN PRAWN FISHERY DATA SUMMARY 2011

Preface

Scope of the Report

This document summarises catch and effort information for the Northern Prawn Fishery (NPF) in 2011, including data relating to interactions with Threatened, Endangered and Protected (TEP) species. The data summary provides an important mechanism for providing feedback to stakeholders on logbook data received by AFMA. In addition, the process of data extraction and analysis assists in identifying data quality issues where they exist and also assists in ensuring that data needs for fisheries management continue to be met.

AFMA has produced data summary reports for the NPF on an annual basis since 1999. As part of the AFMA/NPF Co-Management trial being undertaken in the NPF, this is the fourth year NPF Industry Pty Ltd has been responsible for development of the data summary.

Acknowledgements

Production of this report was made possible through the efforts of the skippers, vessel owners and Crew Member Observers of the NPF. Skippers supplied daily logbook information and vessel owners completed Season Landing Returns. Crew Member Observers supplied information on a voluntary basis whilst undertaking their daily duties, on interactions with TEP species and species identified as 'At-Risk' through the Ecological Risk Assessment process. Thanks to staff from D&S Datafix for processing of Log sheets and Season Landing Returns. Thanks also to staff from AFMA's Fisheries Information Management Branch for their assistance with data management activities.

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Also note that this Data Summary is available on AFMA's website: www.afma.gov.au



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Introduction

The Northern Prawn Fishery Data Summary 2011 contains catch and effort statistics by prawn species, area, time and fishery. Comprehensive bycatch information is also included for the information of stakeholders and to meet AFMA's obligations under Offshore Constitutional Settlement agreements with Queensland, the Northern Territory and Western Australia. Interactions with threatened, endangered and protected (TEP) species, including turtles and sea snakes are also reported.

Description of the Northern Prawn Fishery

Area of Fishery

The Northern Prawn Fishery (NPF) is located off Australia's northern coast, and extends from the low water mark to the outer edge of the Australian fishing zone (AFZ) in the area between Cape York in Queensland and Cape Londonderry in Western Australia (Figure 1).

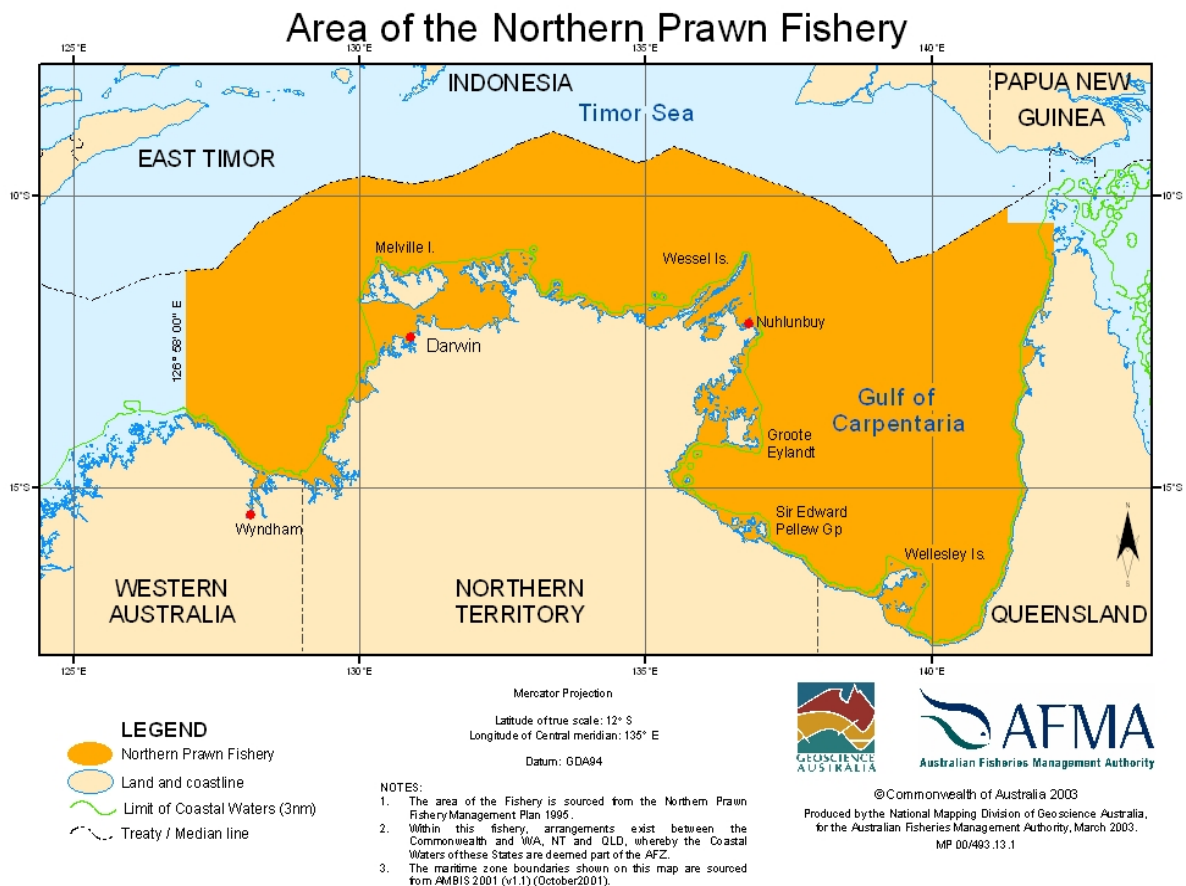


Figure 1: Northern Prawn Fishery Management Area.

Fishing Methods

Prawn trawling is an active fishing method which involves towing a conical-shaped net spread open by two or four steel or timber otter boards over the seabed, commonly called otter trawling. Ground chains are also used on the nets to stimulate prawns into the trawl mouth. Vessels in the NPF may tow a range of nets in a variety of configurations. These are regulated by the *Northern Prawn Fishery Management Plan 1995* (the Management Plan) and relevant Determinations and Directions. In addition to the main nets, a small “try-net” is also used to test the potential catches for a given area. All trawl nets (other than try-nets) in the NPF are required to be fitted with approved Turtle Excluder Devices (TEDs) and Bycatch Reduction Devices (BRDs).

Most of the vessels in the NPF are purpose built from steel and range in length from 17 m to 28 m. All NPF boats have modern, sophisticated catch handling, packing and freezing capabilities as well as wet (brine) holding facilities. All vessels use electronic aids such as colour echo sounders and Global Positioning Systems (GPS) and plotters. Satellite phones and fax equipment is used by most vessels and many have introduced on-board computing facilities, as well as electronic log books. All vessels are required to have a Vessel Monitoring System (VMS).

Management Information

The NPF is currently managed through a combination of input controls (limited entry, seasonal closures, permanent area closures, gear restrictions and operational controls) which are implemented under the Management Plan.

The Management Plan provides for the granting of fully transferable Statutory Fishing Rights (SFRs) that determine the number of trawlers that may operate (Class B SFRs) and the amount of gear (gear SFRs) used in the Fishery. In 2001, the Management Plan was amended to allow the total gear pool to be set by a Determination. The gear SFR is set as an amount of headrope length, which can be varied depending on the stock status and economic grounds.

In 2002 measures to reduce effort by 40% on tiger prawn stocks were introduced. This was achieved by shortening the seasons and a 25% reduction in the value of an SFR from 24 August 2002. This resulted in a reduction in Class B SFRs from 119 to 102.

In 2006 the Commonwealth Government Structural Adjustment Package removed 42 Class B SFRs and approximately 30% of the effective effort from the NPF. The fishery is now composed of 52 vessels, which is the level estimated by the Australian Bureau of Agricultural and Resource Economics and Science (ABARES) to reach Maximum Economic Yield (MEY) in the NPF.

The industry has formed a company 'NPF Industry Pty Ltd' (NPFI) that incorporates around 95% of the fishery gear SFR holders.

In 2008, following a recommendation from the Northern Prawn Fishery Management Advisory Committee (NORMAC) there was an 8% increase in effort in the 2008 tiger prawn season. This translated into NPF gear SFRs increasing in value from 5.625 cm to 7.481 cm and Concessions Holders were permitted to use quad gear (with a 10% penalty applied).

In 2009 the tiger prawn season was increased by four weeks based on the outputs of the 2008 tiger prawn stock assessment, resulting in a season commencing 25 July and closing 19 December. This was the first time since the introduction of the mid-year closure in 1987 that the tiger prawn season commenced prior to 1 August.



In 2011 the banana season was extended by two weeks, commencing on 1 April and concluding on 24 June 2011. The season extension was agreed upon by NORMAC to enable industry to make optimal use of an expected large available biomass of banana prawns resulting from favorable environmental conditions. The tiger season commenced on 1 August and concluded one week early, on 20 November. The early closure was triggered by low catches, to protect stocks and prevent economic losses.

Species

The NPF targets nine commercial species of prawns including white banana (*Fenneropenaeus merguensis*), red-legged banana (*F. indicus*), brown tiger (*Penaeus esculentus*), grooved tiger (*P. semisulcatus*), blue endeavour (*Metapenaeus endeavouri*), and red endeavour (*M. ensis*). Scampi, squid, scallops and bugs are also taken as by-product.

Data Collection Program

NPF operators are required to complete the 'Northern and Torres Strait Prawn Fisheries Daily Fishing Log' (NP16), a paper logbook on a daily basis. Alternatively, NPF operators can use an electronic version (e-log). In 2011 approximately 46 operators during the banana prawn season and 42 operators during the tiger prawn season used e-logs. Both paper logbook and e-log data is included in this data summary.

Methods Used For Preparing Data Summary

The data used to prepare the Northern Prawn Fishery Data Summary is comprised of logbook information (NP16 and e-log) submitted by NPF skippers and the seasonal landing returns (SLR-T01) completed by SFR holders. This information is stored by AFMA on the Northern Prawn, Kimberley Prawn and Torres Strait Prawn database.

The data used in this summary was extracted during March 2012 after making every effort to reconcile the data provided by skippers with that obtained from vessel owners. This was to ensure that the logbook data and the landings figures approximated each other as closely as possible.

The banana prawn catches recorded in the logbooks from 53 vessels (total number of vessels fishing at any one time is limited to 52, however one boat SFR was used by two different vessels during the 2011 banana prawn season) were within 10% of the catch recorded in the seasonal landing returns for the banana prawn season. On average logbook catches of banana prawns were underestimated by 0.9% when compared to Seasonal Landing Returns (SLR), with the greatest discrepancy being 11.28% for the banana prawn season. The tiger prawn catches recorded in the logbooks from 53 vessels were within 10% of catches recorded in the SLR for the tiger prawn season. On average logbook catches of tiger prawns were overestimated by 3.3% when compared to SLRs, with the greatest discrepancy for a single vessel being 27.94% for the tiger prawn season.

The catch and effort estimates in Table 1, Figure 2 and Figure 6 were derived from a combination of logbook and seasonal landing returns figures. The remainder of the tables and figures in the summary represent logbook data only. This may cause discrepancies between totals. Minor discrepancies may also occur due to rounding of values.



Banana and Tiger Prawn Fishery Components

Fishery statistics have been split into banana and tiger prawn fishery components according to the composition of the catch in logbook records. If half or more of a vessel's daily catch was banana prawns or there was no prawn catch and the vessel was fishing, the vessel was defined as operating in the banana prawn fishery on that day; otherwise it was defined as operating in the tiger prawn fishery. Fishing days where vessels have been searching, but have not supplied details of the area searched, have not been included in the effort figures.

Banana prawn fishery catch is the catch of all species (bananas + tigers + endeavours + kings) when a vessel is defined as fishing in the banana prawn fishery. Likewise, tiger prawn fishery catch is the catch of all species when a vessel is defined as operating in the tiger prawn fishery.

Catch and Effort Data for the Northern Prawn Fishery

Coverage

The fishery is split into two seasons. In 2011, the seasons were from 31 March UTC to 24 June UTC (banana prawn season) and from 01 August UTC to 20 November UTC (tiger prawn season). There were 85 days available to fish during the first season and 112 during the second season (a total of 197), which was 4 days more than 2010.

Catch

The total NPF prawn catch for 2011 was 8,335 t compared with 7,711 t in 2010 (Table 1). The catch of banana prawns in 2011 (7,141 t) was well above that of the previous year (5,642 t). The catch of tiger prawns decreased by 54% from 1,628 t in 2010 to 749 t in 2011. Catches of endeavour prawns increased by 1.7% from 429 t in 2010 to 437 t in 2011 (Figure 2). In 2011 catches of king prawns decreased from 12 t in 2010 to 8 t in 2011.

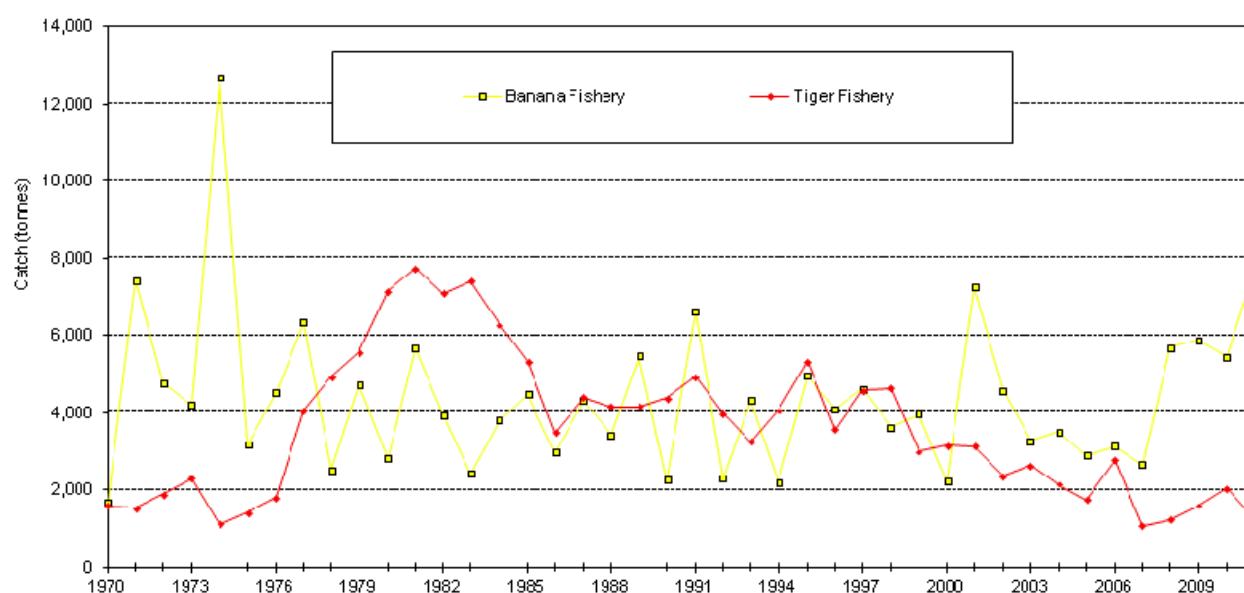


Figure 2: Catch in the banana and tiger prawn fisheries between 1970 and 2011.

Table 1: Annual reconciled landings, effort and vessel number in the NPF from 1970 to 2011.

| Year | Banana (t) | Tiger (t) | Endeavour (t) | King (t) | Total Catch (t) | No. of Vessels | Banana Fishery Effort (days) | Tiger Fishery Effort (days) |
|------------------|------------|-----------|---------------|----------|-----------------|----------------|------------------------------|-----------------------------|
| 1970 | 1,702 | 1,138 | 417 | 0 | 3,257 | 191 | 2,041 | 5,818 |
| 1971 | 7,364 | 1,183 | 400 | 0 | 8,948 | 169 | 5,571 | 6,057 |
| 1972 | 4,801 | 1,380 | 472 | 0 | 6,654 | 180 | 4,327 | 7,380 |
| 1973 | 4,226 | 1,672 | 594 | 0 | 6,492 | 217 | 4,917 | 7,362 |
| 1974 | 12,711 | 666 | 434 | 4 | 13,815 | 196 | 7,537 | 3,439 |
| 1975 | 3,160 | 973 | 444 | 6 | 4,583 | 107 | 5,361 | 6,010 |
| 1976 | 4,519 | 1,118 | 675 | 5 | 6,319 | 145 | 7,238 | 6,660 |
| 1977 | 6,345 | 2,900 | 1,125 | 28 | 10,398 | 193 | 7,257 | 11,673 |
| 1978 | 2,535 | 3,599 | 1,240 | 82 | 7,456 | 237 | 5,569 | 18,749 |
| 1979 | 4,775 | 4,218 | 1,213 | 94 | 10,300 | 240 | 7,328 | 17,791 |
| 1970-'79 average | 5,214 | 1,885 | 701 | 22 | 7,822 | 188 | 5,715 | 9,094 |
| 1980 | 2,835 | 5,124 | 1,891 | 111 | 9,964 | 269 | 8,391 | 30,594 |
| 1981 | 5,672 | 5,559 | 2,073 | 95 | 13,400 | 286 | 11,524 | 31,895 |
| 1982 | 3,875 | 4,891 | 2,124 | 144 | 11,036 | 271 | 8,751 | 32,956 |
| 1983 | 2,382 | 5,751 | 1,488 | 207 | 9,831 | 254 | 6,856 | 34,551 |
| 1984 | 3,770 | 4,525 | 1,714 | 83 | 10,095 | 252 | 5,932 | 32,447 |
| 1985 | 4,469 | 3,592 | 1,671 | 77 | 9,811 | 231 | 6,946 | 26,516 |
| 1986 | 2,935 | 2,682 | 748 | 85 | 6,451 | 238 | 7,132 | 26,669 |
| 1987 | 4,257 | 3,617 | 772 | 65 | 8,713 | 234 | 7,954 | 22,478 |
| 1988 | 3,381 | 3,458 | 669 | 81 | 7,591 | 222 | 6,655 | 26,264 |
| 1989 | 5,466 | 3,173 | 909 | 85 | 9,636 | 223 | 7,439 | 27,036 |
| 1980-'89 average | 3,904 | 4,237 | 1,406 | 103 | 9,653 | 248 | 7,758 | 29,141 |
| 1990 | 2,221 | 3,550 | 735 | 128 | 6,636 | 200 | 5,044 | 25,525 |
| 1991 | 6,605 | 3,987 | 879 | 81 | 11,554 | 172 | 6,515 | 20,744 |
| 1992 | 2,254 | 3,084 | 880 | 47 | 6,267 | 170 | 5,132 | 21,789 |
| 1993 | 4,292 | 2,515 | 733 | 35 | 7,572 | 127 | 6,299 | 16,019 |
| 1994 | 2,157 | 3,162 | 872 | 72 | 6,263 | 128 | 4,955 | 18,592 |
| 1995 | 4,961 | 4,125 | 1,150 | 58 | 10,294 | 125 | 4,880 | 16,834 |
| 1996 | 4,078 | 2,311 | 1,235 | 41 | 7,665 | 127 | 5,525 | 16,635 |
| 1997 | 4,587 | 2,694 | 1,870 | 51 | 9,202 | 129 | 5,476 | 15,385 |
| 1998 | 3,569 | 3,218 | 1,322 | 20 | 8,123 | 130 | 5,301 | 18,003 |
| 1999 | 3,904 | 2,136 | 885 | 21 | 6,947 | 129 | 5,639 | 12,675 |
| 1990-'99 average | 3,863 | 3,078 | 1,056 | 55 | 8,052 | 144 | 5,477 | 18,220 |
| 2000 | 2,195 | 2,190 | 958 | 13 | 5,335 | 121 | 3,697 | 12,736 |
| 2001 | 7,245 | 1,983 | 1,157 | 4 | 10,389 | 118 | 6,247 | 10,440 |
| 2002 | 4,577 | 1,943 | 411 | 5 | 6,936 | 114 | 4,148 | 8,718 |
| 2003 | 3,238 | 2,222 | 435 | 4 | 5,898 | 97 | 4,114 | 8,503 |
| 2004 | 3,520 | 1,767 | 396 | 3 | 5,686 | 96 | 3,985 | 7,793 |
| 2005 | 2,901 | 1,744 | 281 | 20 | 4,946 | 89 | 3,364 | 7,967 |
| 2006 | 3,117 | 1,802 | 363 | 28 | 5,310 | 77 | 3,283 | 6,983 |
| 2007 | 2,902 | 1,192 | 196 | 20 | 4,310 | 51 | 2,696 | 4,829 |
| 2008 | 5,816 | 1,021 | 213 | 7 | 7,058 | 53 | 3,347 | 4,556 |
| 2009 | 5,881 | 1,250 | 346 | 7 | 7,483 | 55 | 3,095 | 4,889 |
| 2000-'09 average | 4,139 | 1,711 | 476 | 11 | 6,335 | 87 | 3,798 | 7,741 |
| 2010 | 5,642 | 1,628 | 429 | 12 | 7,711 | 52 | 3,146 | 4,898 |
| 2011 | 7,141 | 749 | 437 | 8 | 8,335 | 55 | 3,440 | 4,143 |

* Note: Catch data is extracted from Seasonal Landing Returns.

Catch by week

Figures 3 (a), (b) and (c) show the catch of banana and tiger prawns by week during 2009, 2010 and 2011. Highest banana prawn catches were recorded in the first week of 2011, unlike 2010, during which highest catches were reported during week three (thought to be a product of cyclonic activity on season opening in 2010 which prevented most of the fleet from fishing on a number of days over that period). Banana prawn catches in 2011 experienced a steady decline through the 12 week season, with the exception of a slight increase (3.8%) in catches during week four.

In 2011, catches of tiger prawns were highest during weeks 5 and 9 of tiger season, at 69t and 68t, respectively.

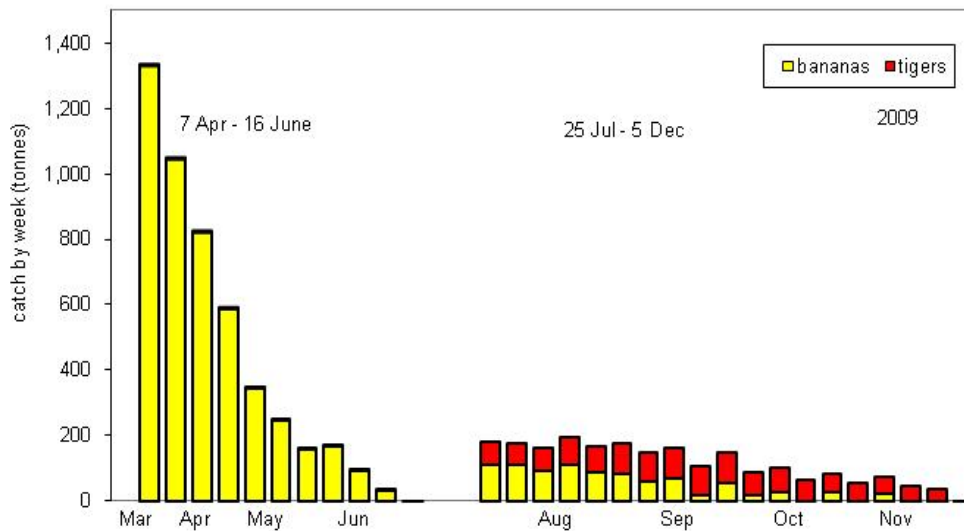


Figure 3a: Weekly catches of banana and tiger prawns (t) in the NPF in 2009.

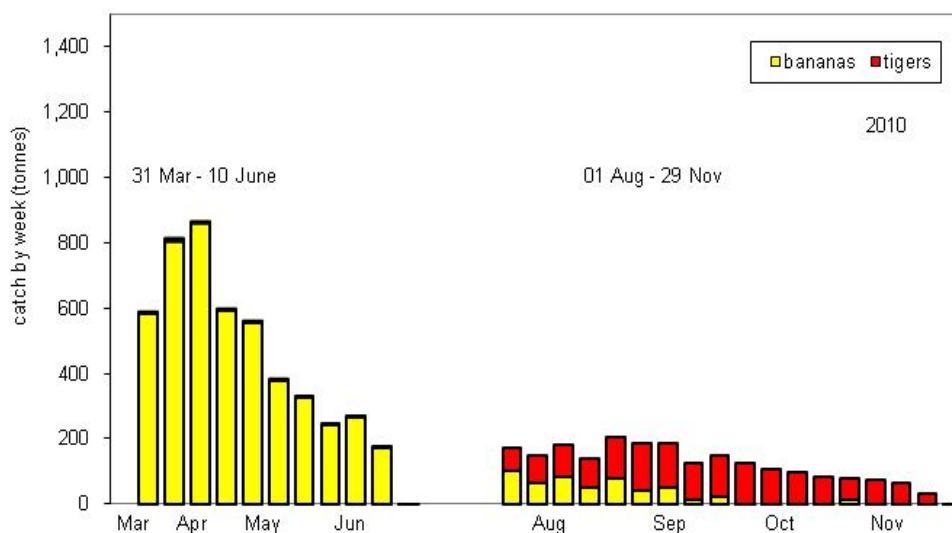


Figure 3b: Weekly catches of banana and tiger prawns (t) in the NPF in 2010.

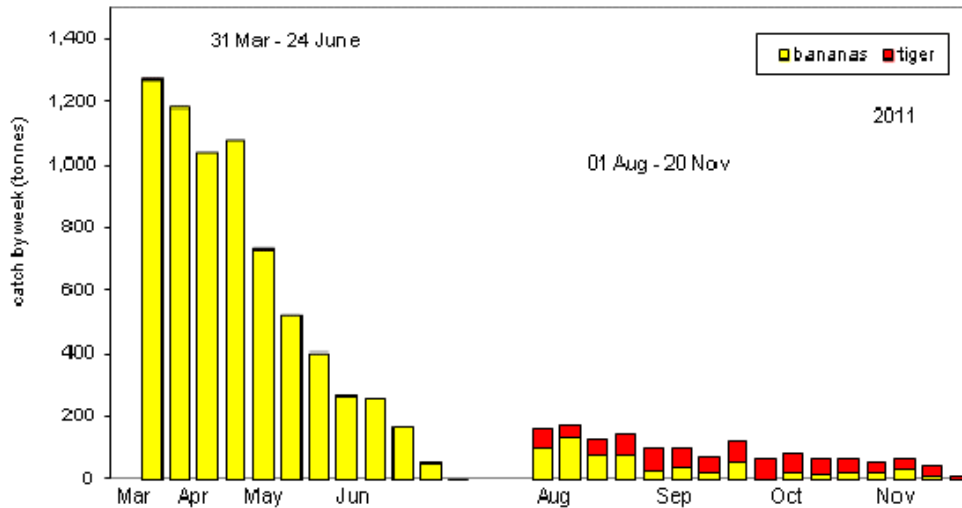


Figure 3c: Weekly catches of banana and tiger prawns (t) in the NPF in 2011.

Effort

Nominal and effective effort

Nominal effort is the number of days recorded by skippers in their logbooks. Effective effort applies only to the tiger prawn fishery and is based on the assumption that there has been an 'effort creep' (an increase in effectiveness of the gear utilised and fishing operations). A number of different approaches to effort creep are being used by Northern Prawn Fishery Resource Assessment Group (NPRAG), including using an average 5% per year as well as variable effort creeps. As in previous years, for the purpose of preparing this report we have used 5%. Nominal effort in the banana prawn fishery increased by 294 days (9.3%) in 2011 compared to 2010. In the tiger prawn fishery, nominal effort decreased by 755 days (15.5%) in 2011 compared to 2010. Effective effort in the tiger prawn fishery decreased by 775 days compared to 2010.

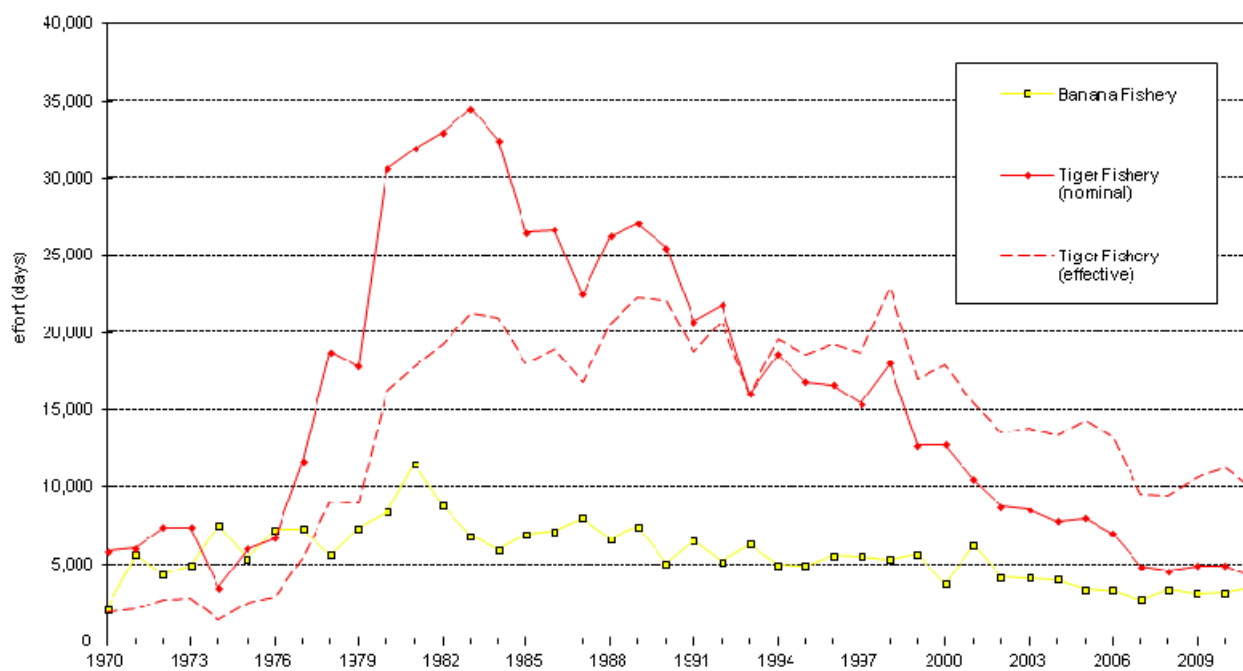


Figure 4: Effort in the banana and tiger prawn fisheries in the NPF between 1970 and 2011.

Catch Rate

It is worth noting that there have been a number of changes to headrope length implemented in the NPF over time. A reduction in headrope length of 25% came into effect at the start of the first season in 2005. More recently, an 8% increase in headrope length was implemented in the 2008 tiger prawn season. As a result “catch rate”, measured in terms of Catch per Unit Effort (CPUE), being tonnes per day may be affected. It is also important to note that trends in CPUE don’t necessarily reflect trends in stock abundance.

The banana prawn fishery CPUE increased from a daily rate of 1.735 t per day in 2010 to 2.232 t per day in 2011. The nominal CPUE for the tiger prawn fishery decreased from 0.416 t per day in 2010 to 0.304 t per day in 2011, while the effective CPUE decreased from 0.181 t per day in 2010 to 0.126 t per day in 2011 (Figure 5).

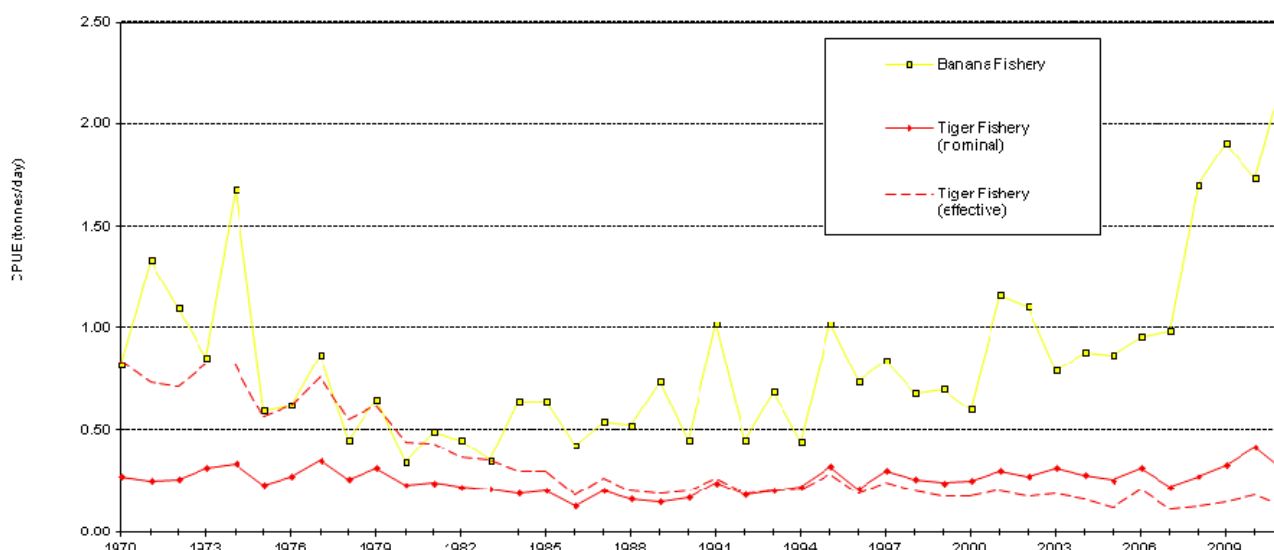


Figure 5: Catch rate in the banana and tiger prawn fisheries between 1970 and 2011.

Catch, effort and catch rate by month

The highest total prawn catches during the 2011 banana prawn season were obtained during April, whilst the highest total prawn catches during the 2011 tiger prawn season were obtained during September (Table 2).

Table 3 shows effort by month in the banana and tiger prawn seasons for 2011. Effort for 2011 in the banana prawn season was highest in April and lowest in June. Tiger prawn season effort was highest in October and lowest the following month in November as many boats began to return to port (Table 3).

Monthly CPUE for banana prawns was highest in April during the banana prawn season (Table 4). Monthly CPUE for both nominal and effective effort for tiger prawns was highest in August.

Table 2: Monthly catch by species in 2011.

| Catch (t) | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Grand Total |
|--------------|--------------|--------------|------------|----------|------------|------------|------------|------------|--------------|
| Banana | 4,761 | 1,733 | 246 | 0 | 415 | 138 | 88 | 42 | 7,423 |
| Tiger | 1 | 1 | 1 | 0 | 245 | 260 | 227 | 79 | 814 |
| Endeavour | 0 | 0 | 0 | 0 | 124 | 102 | 152 | 109 | 487 |
| King | | | | 0 | | 0 | 0 | 0 | 0 |
| Total | 4,762 | 1,734 | 247 | 0 | 784 | 500 | 467 | 230 | 8,724 |

Table 3: Monthly effort in the banana and tiger prawn seasons in 2011.

| Effort (days) | April | May | June | July | Aug | Sep | Oct | Nov | Grand Total |
|---------------------------|--------------|------------|------------|----------|--------------|--------------|--------------|--------------|---------------|
| Banana Fishery | 1,290 | 983 | 249 | 0 | 455 | 166 | 125 | 108 | 3,376 |
| Tiger Fishery (nominal) | 0 | 0 | 7 | 0 | 995 | 1,222 | 1,355 | 564 | 4,143 |
| Tiger Fishery (effective) | 0 | 0 | 18 | 0 | 2,514 | 3,088 | 3,424 | 1,425 | 10,469 |
| Total | 1,290 | 983 | 274 | 0 | 3,964 | 4,476 | 4,904 | 2,097 | 17,988 |

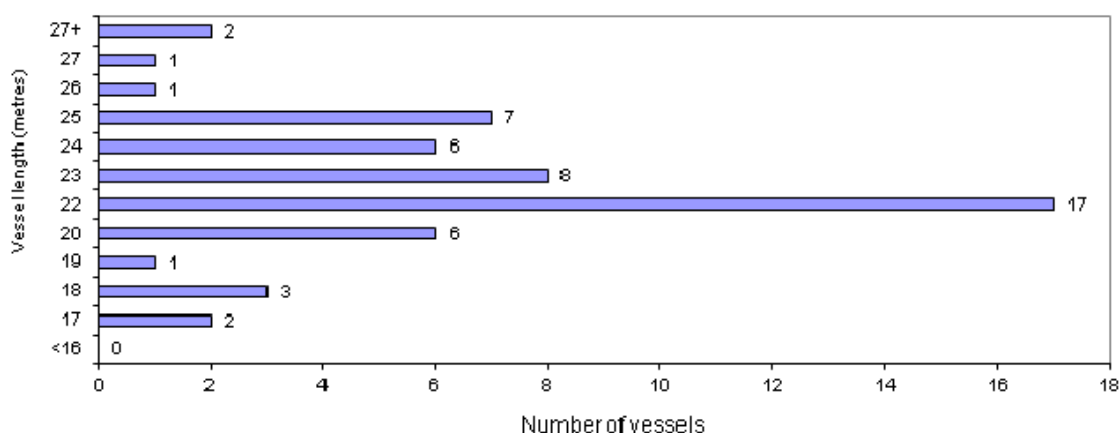
Table 4: Monthly catch rate for all species in the banana and tiger prawn seasons in 2011.

| CPUE (t/day) | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Banana Fishery | 3.691 | 1.764 | 0.989 | 0.000 | 0.349 | 0.883 | 0.733 | 0.443 |
| Tiger Fishery (nominal) | 0.000 | 0.000 | 0.099 | 0.000 | 0.499 | 0.290 | 0.278 | 0.323 |
| Tiger Fishery (effective) | 0.000 | 0.000 | 0.039 | 0.000 | 0.138 | 0.115 | 0.110 | 0.128 |

Vessel and gear information

Vessel length

A total of 54 different vessels fished in the NPF during 2011 (the total number of vessels fishing at any one time was limited to 52, however leasing of SFRs during the year resulted in a total of 54 vessels operating within the fishery in total during the year. As in 2010, the most common NPF vessel length in 2011 was between 22.0-22.9 metres (Figure 6).

**Figure 6:** Frequency of vessel lengths in the NPF fleet in 2011.

Distribution of catch by vessel

The majority of NPF vessels caught well in 2011: Of the 51 vessels which fished during the 2011 banana prawn season, 47 of them (92%) caught >60 t (Figure 7a). Two vessels (4%) caught 50-59 t, while the remaining two vessels (4%) caught <30-39 t, and 40-49 t, respectively (Figure 7a).

Distribution of catch was more evenly spread during the 2011 tiger season. Of the 53 vessels which fished during the 2011 tiger prawn season, 20 of them (38%) caught 30-39 t, 14 (26%) caught 20-29t, 6 vessels (11%) caught >=60 t and 40-49 t, respectively, 5 vessels (9%) caught <20 t, and 2 vessels (3%) caught 50-59 t (Figure 7b).

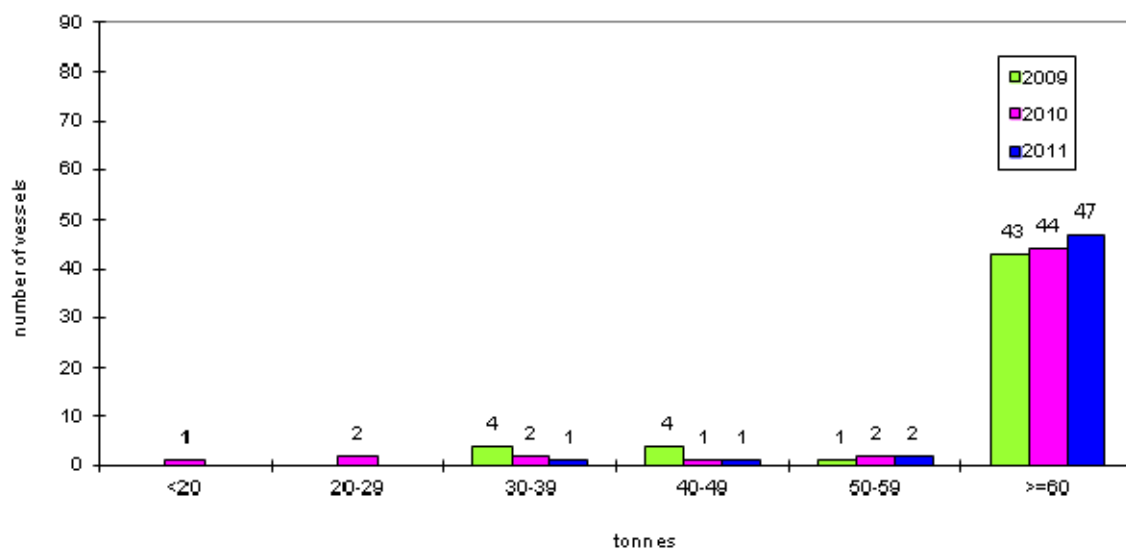


Figure 7a: Distribution of total catch in the banana prawn season, 2007-2011.

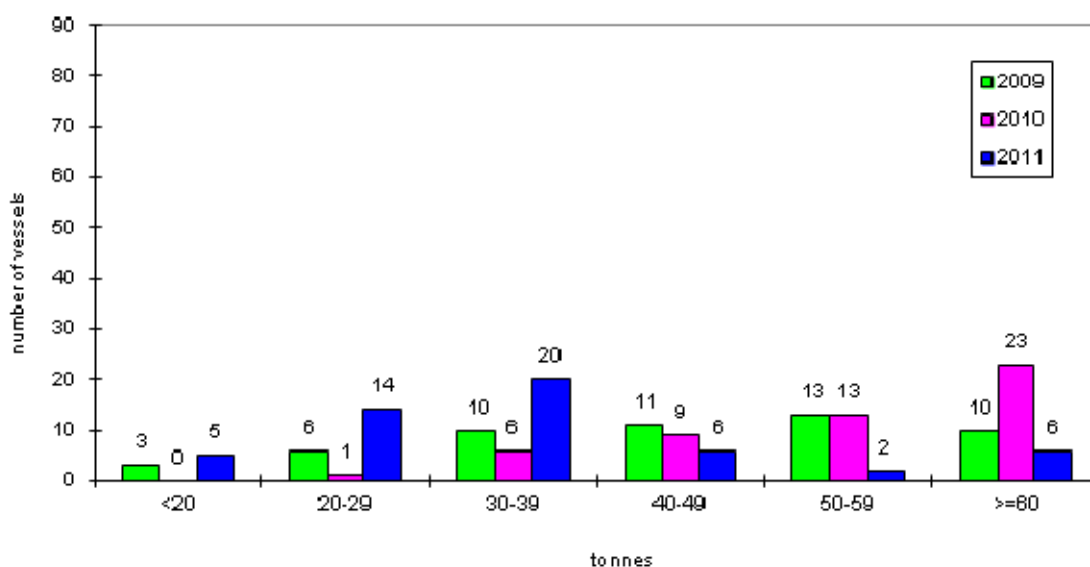


Figure 7b: Distribution of total catch in the tiger prawn season, 2007-2011.

Average catch per vessel

The increasing trend in average total prawn catch per vessel continued in 2011. Average catch per vessel for all prawns increased 15% from 144 t in 2010 to 166 t per vessel in 2011 (Figure 8a). The average catch per vessel for banana prawns in 2011 increased by 35.5% compared to 2010 at 141 t per vessel (Figure 8b). Conversely, average catch of tiger prawns per vessel decreased by 48% from 31 t in 2010 to 15 t per vessel in 2011 (Figure 8c).

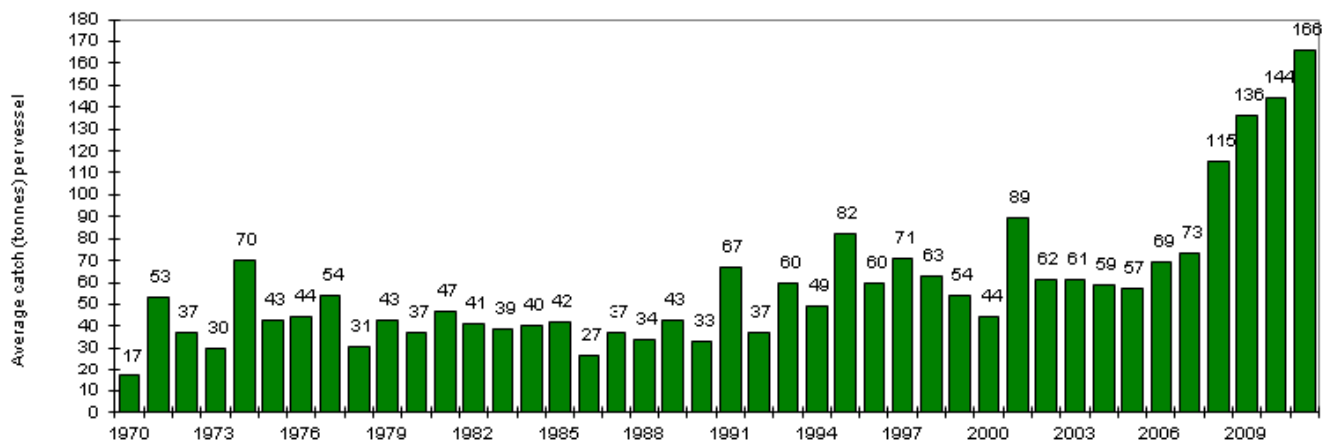


Figure 8a: Average total catch of all prawns per vessel in the NPF from 1970 to 2011.

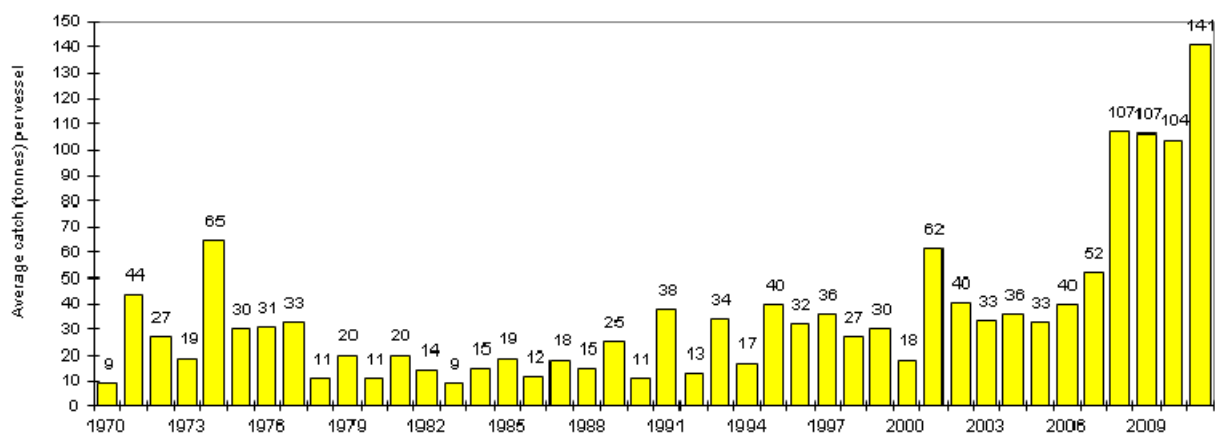


Figure 8b: Average total catch of banana prawns per vessel in the NPF from 1970 to 2011.

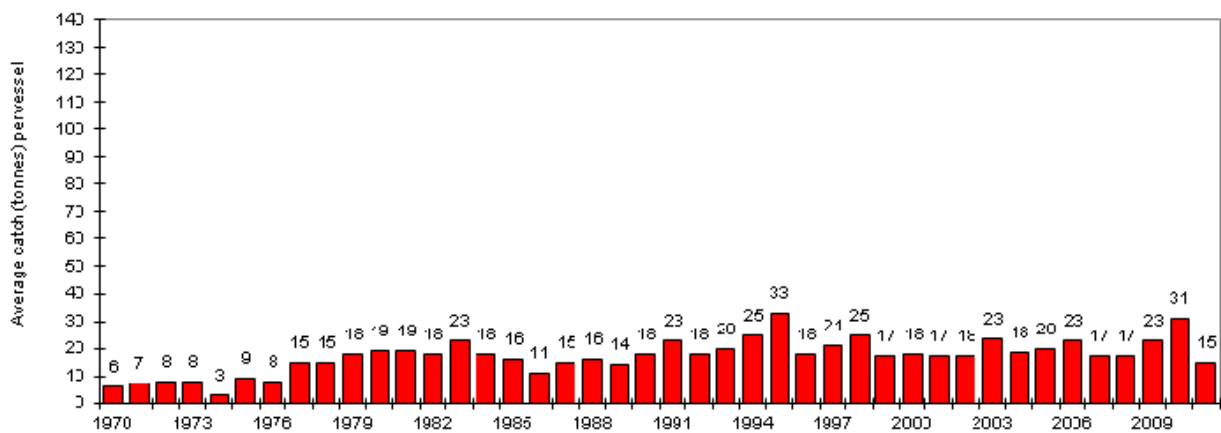


Figure 8c: Average total catch of tiger prawns per vessel in the NPF from 1970 to 2011.

Fishing Gear

Total tiger prawn headrope in 2011 stayed similar compared to 2010 at 1,475 fathoms (2.7km) compared to 1,414 fathoms (2.6km) in 2010 (Figure 9). The mean headrope length in 2011 was 27.84 fathoms (50.9m) compared with 27.18 fathoms (49.73m) in 2010 (Figure 10).

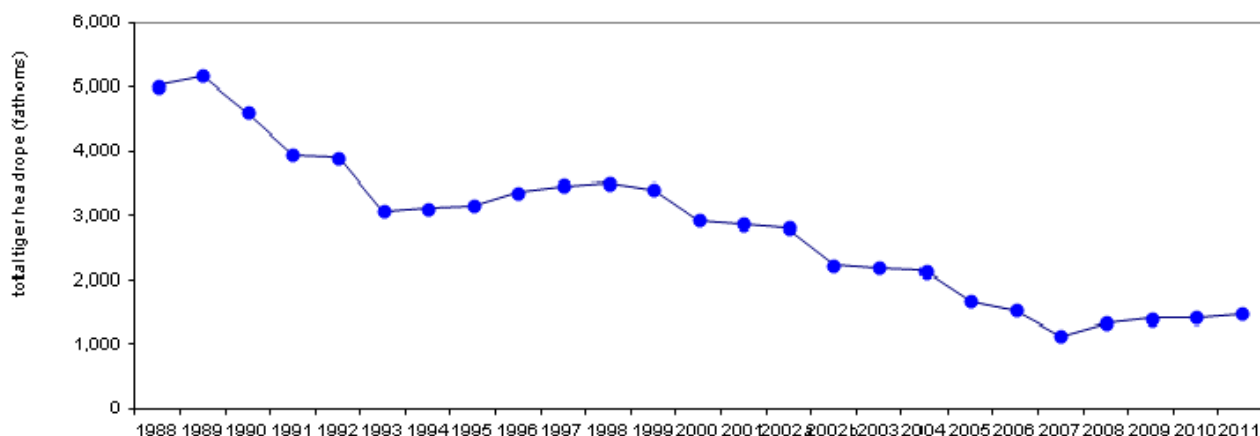


Figure 9: Total tiger prawn season headrope length in the NPF from 1988 to 2011.

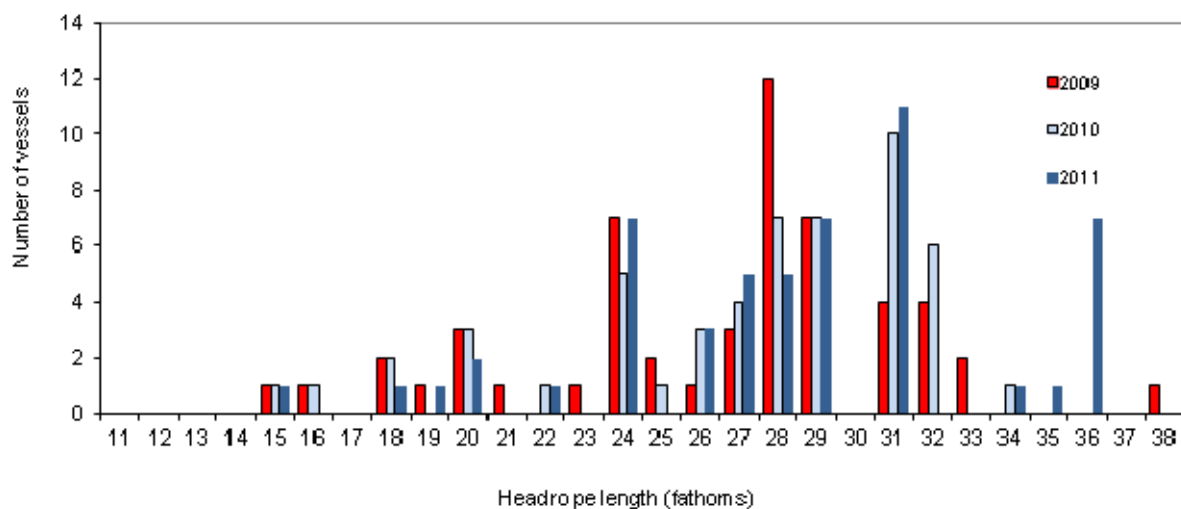


Figure 10: Frequency of headrope length for the tiger prawn season in the NPF from 2008 to 2011.

Catch and effort by statistical area in the NPF

All areas

Catch and effort has been partitioned into the 15 statistical areas illustrated below (Figure 11) and is detailed on the following pages. The highest banana prawn catches were recorded in the Bold area with 2,451 t (Figure 12). The highest catches of tiger prawns were recorded in the Groote area with 191 t (Figure 13).

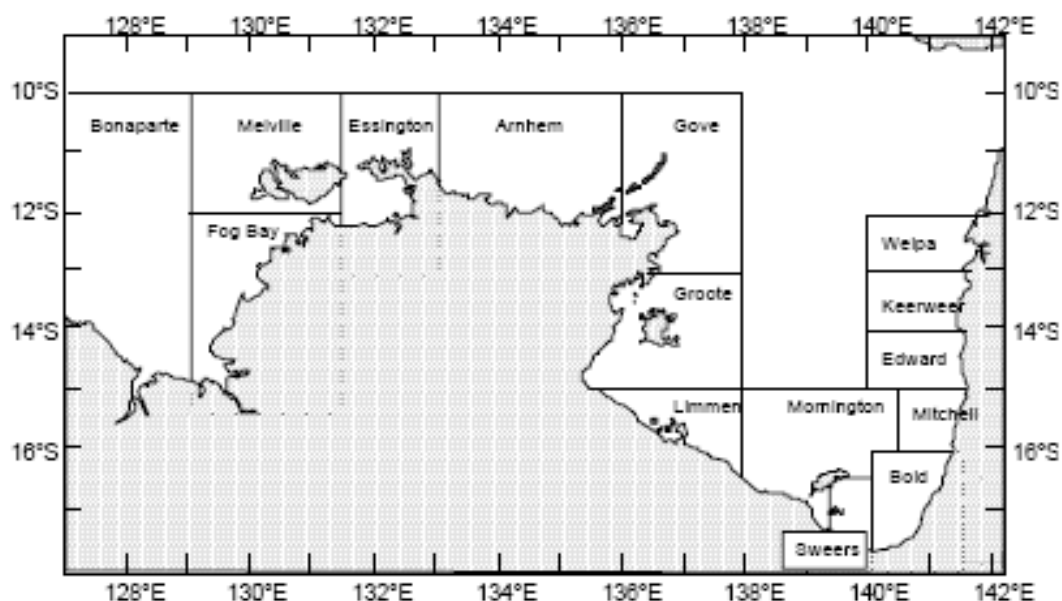


Figure 11: Statistical areas of the NPF.

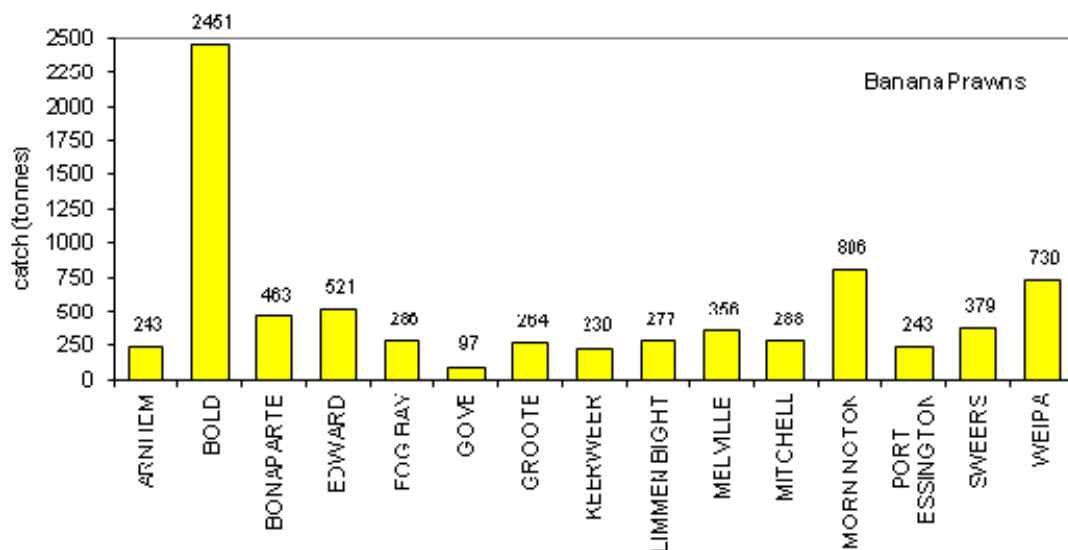


Figure 12: Total catch of banana prawns for each statistical area of the NPF in 2011.

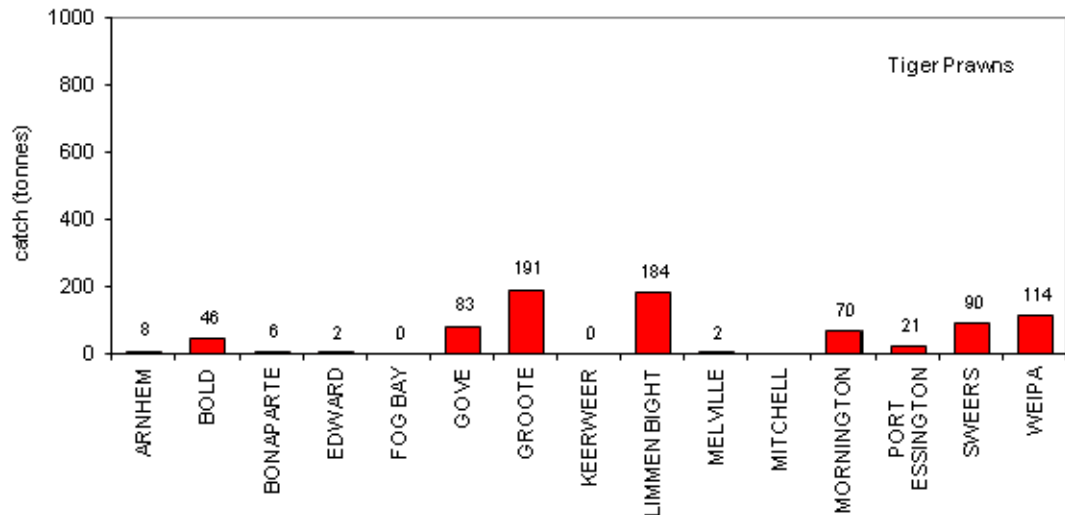


Figure 13: Total catch of tiger prawns for each statistical area of the NPF in 2011.

Weipa

Banana prawn catches increased from 280 t in 2010 to 730 t in 2011. Tiger prawn catches increased from 44 t in 2010 to 114 t in 2011 and catches of endeavour prawns increased from 25 t in 2010 to 82 t in 2011 (Figure 14). Banana prawns dominated the catch in this area during 2011, comprising 79% (Figure 15).

Effort in the banana prawn fishery increased from 173 days in 2010 to 262 days in 2011 (Figure 16a). CPUE of banana prawns increased from 1.62 t per day in 2010 to 2.78 t per day in 2011 (Figure 16b). Effort in the tiger prawn fishery increased from 194 days in 2010 to 642 days in 2011 (Figure 16a). Nominal and effective CPUE of tiger prawns decreased from 0.355 t and 0.162 t per day in 2010 respectively, to 0.306 t and 0.140 t per day in 2011 (Figure 16c).

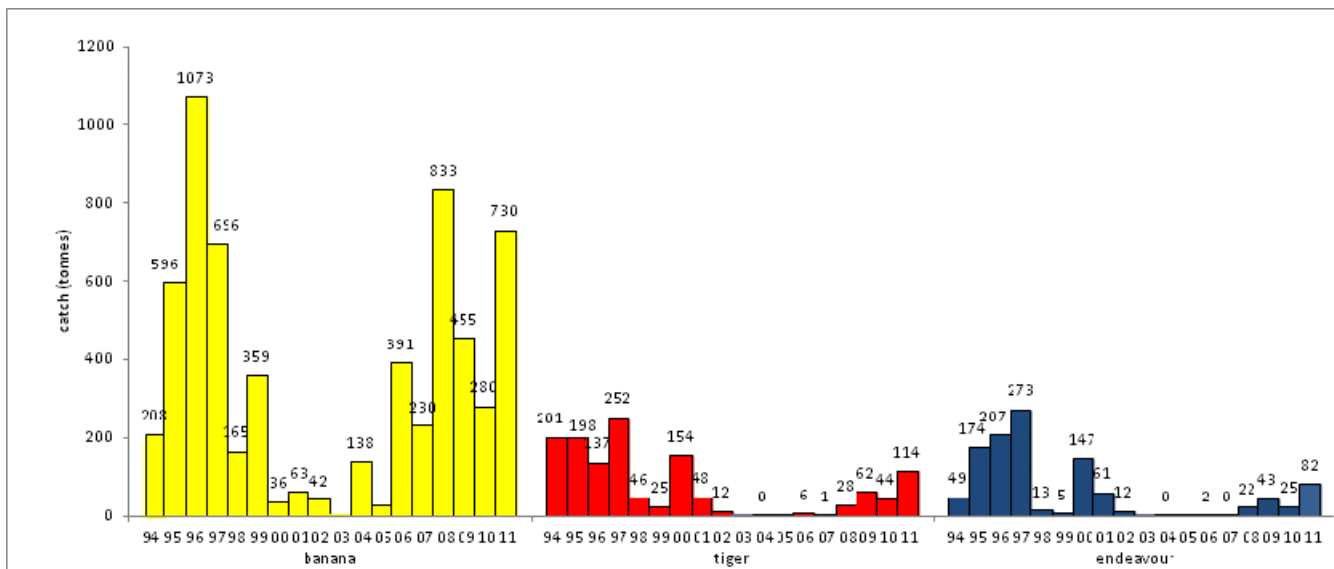
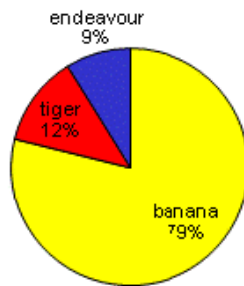


Figure 14: Catch by species in the Weipa area between 1994 and 2011.

a)



b)

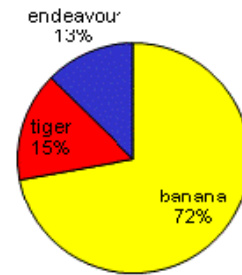


Figure 15: (a) Percentage catch of prawn species in the Weipa area during 2011, and (b) percentage catch of prawn species in the Weipa area from 1994 to 2011 (b).

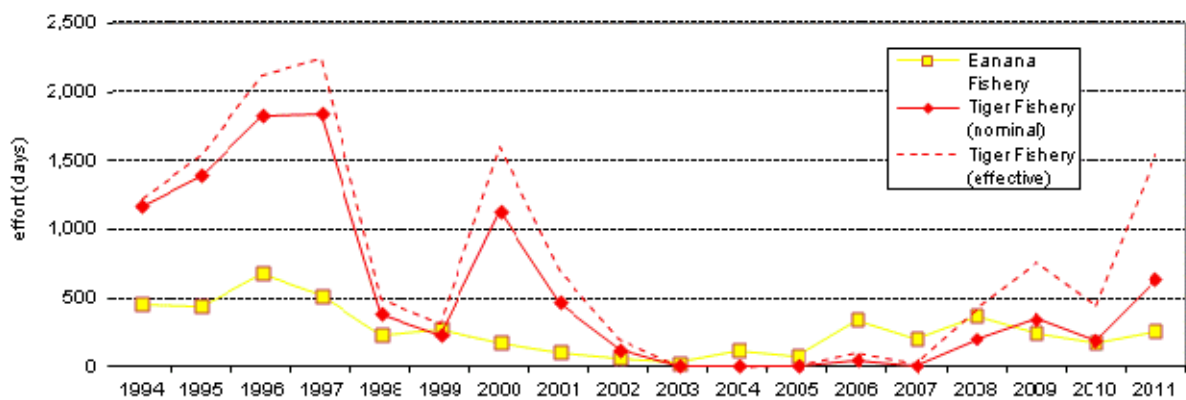


Figure 16a: Effort for the banana and tiger prawn fisheries in the Weipa area between 1994 and 2011.

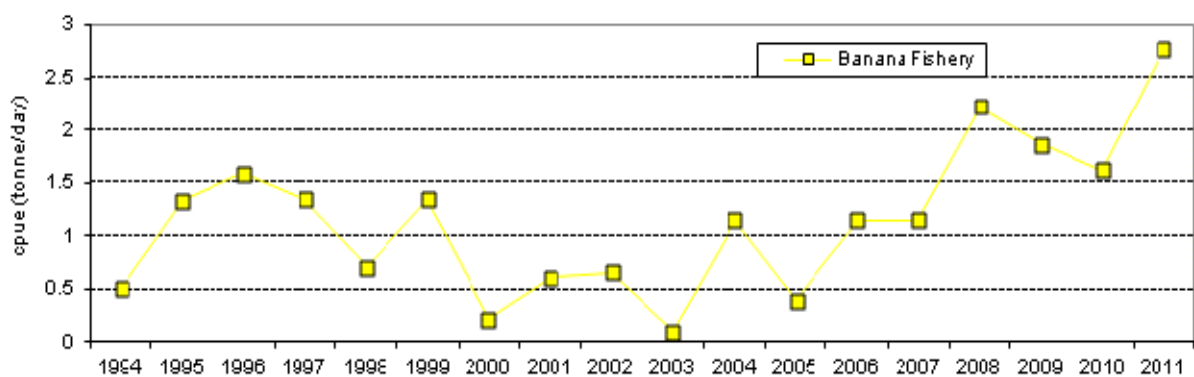


Figure 16b: Catch rate for the banana prawn fishery in the Weipa area between 1994 and 2011.

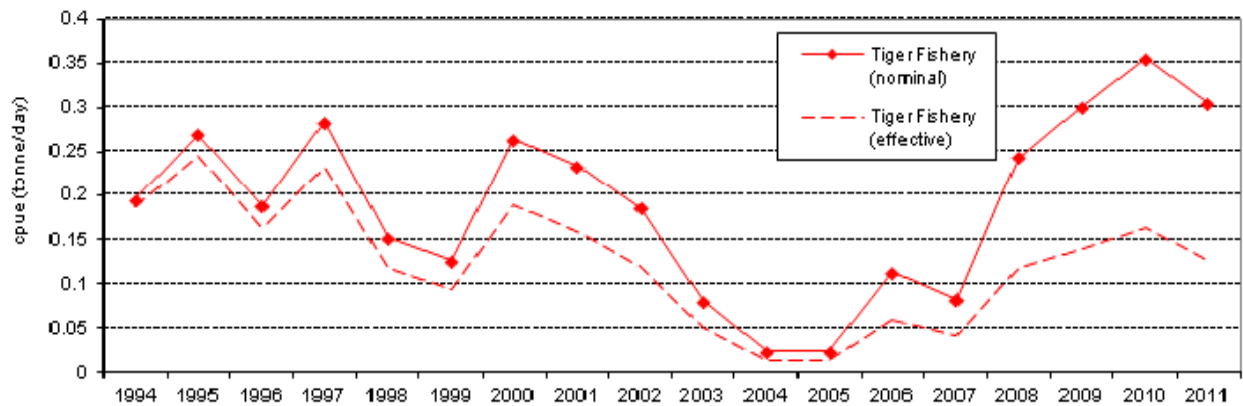


Figure 16c: Catch rate for the tiger prawn fishery in the Weipa area between 1994 and 2011.

Keerweer

Banana prawn catches increased from 89 t in 2010 to 230 t in 2011. Catches of tiger and endeavour prawns were less than 1 t (Figure 17). Banana prawns comprised 100% of the catch in 2011 (Figure 18a).

Effort in the banana prawn fishery increased from 75 days in 2010 to 82 days in 2011 (Figure 19a). CPUE for banana prawns increased from 1.19 t per day in 2010 to 2.81 t per day in 2011 (Figure 19b). Nominal and effective CPUE of tiger prawns increased from 0 t per day in 2010 to 0.174 t and 0.072 t per day in 2011 (Figure 19c).

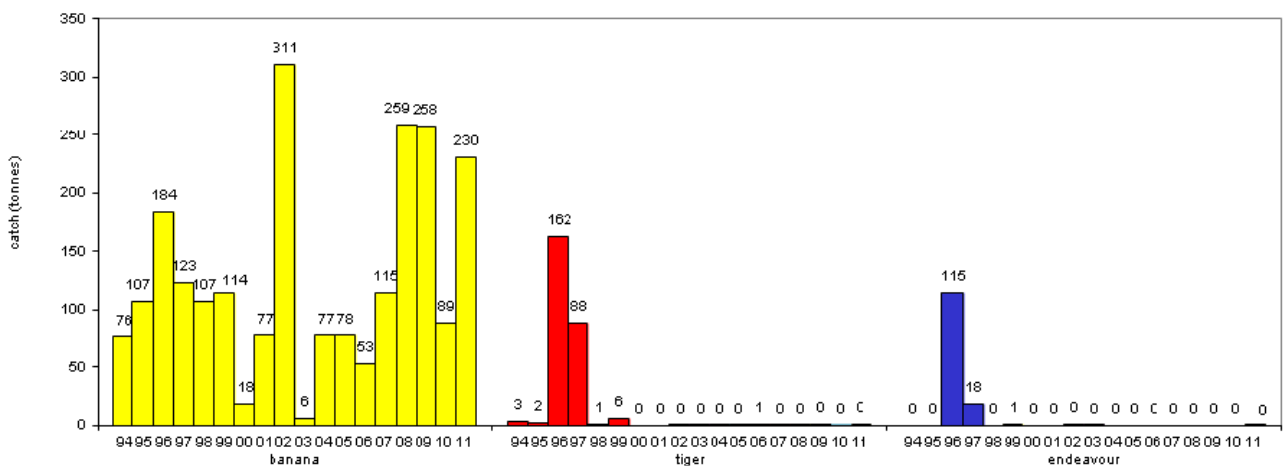
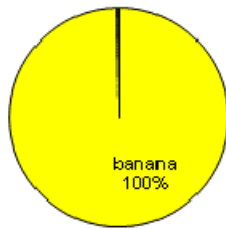


Figure 17: Catch by species in the Keerweer area between 1994 and 2011.

a)



b)

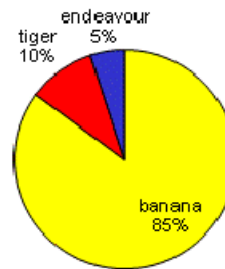


Figure 18: (a) Percentage catch of prawn species in the Keerweer area during 2011 and (b) percentage catch of prawn species in the Keerweer area from 1994 to 2011.

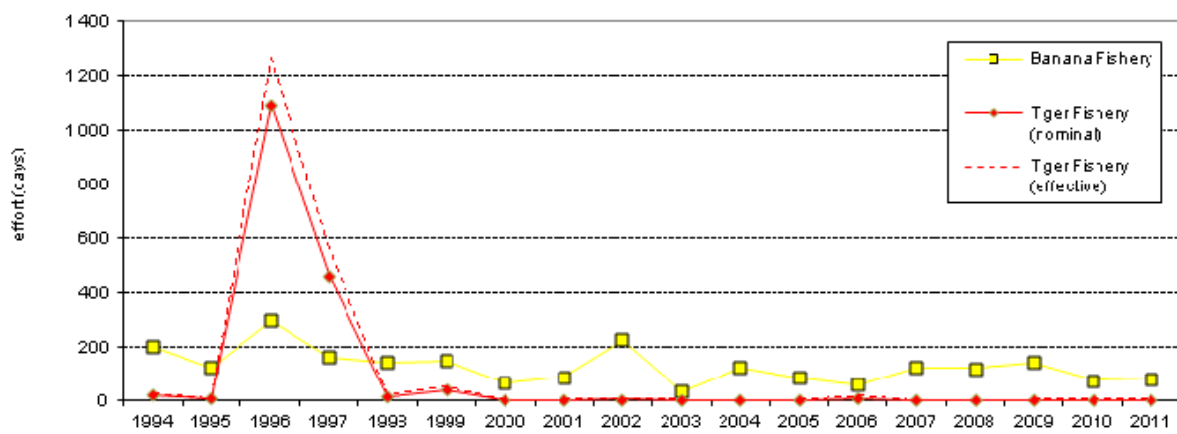


Figure 19a: Effort for the banana and tiger prawn fisheries in the Keerweer area between 1994 and 2011.

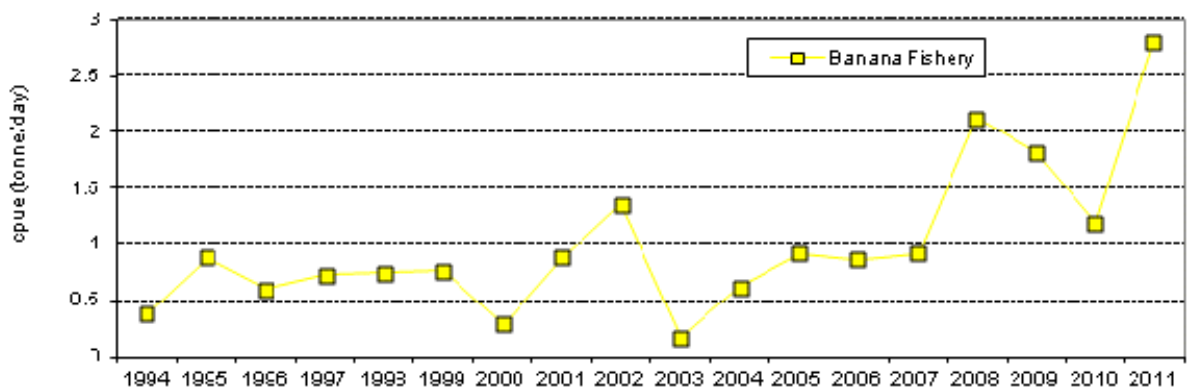


Figure 19b: Catch rate for the banana prawn fishery in the Keerweer area between 1994 and 2011.

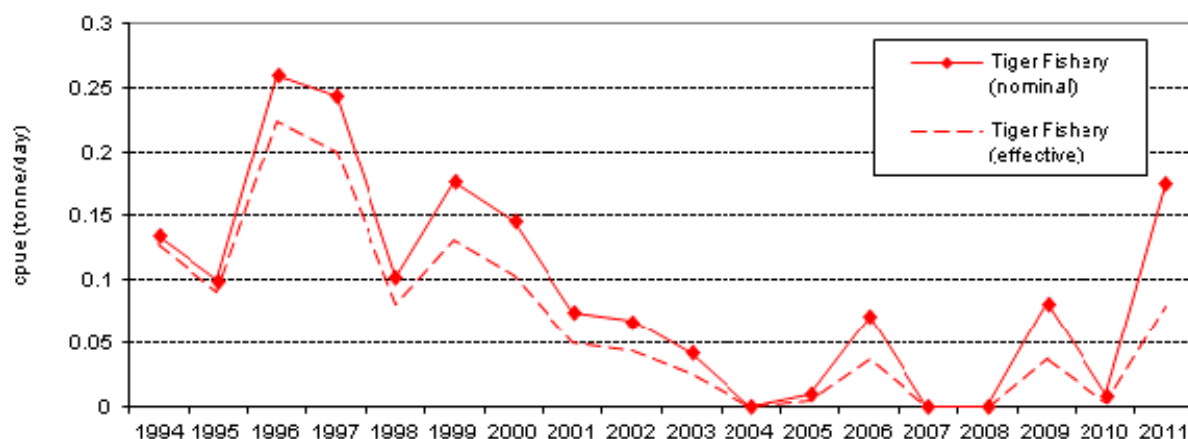


Figure 19c: Catch rate for the tiger prawn fishery in the Keerweer area between 1994 and 2011.

Edward

Banana prawn catches in the Edward area increased from 426 t in 2010 to 521 t in 2011. Both tiger and endeavour prawn catches were less than 1 t (Figure 20). Banana prawns comprised 100% of the catch in 2011 (Figure 21).

Effort in the banana prawn fishery decreased from 228 days in 2010 to 178 days in 2011 (Figure 22a). CPUE of banana prawn increased from 1.868 t per day in 2010 to 2.935 t per day in 2011 (Figure 22b). Nominal and effective CPUE of tiger prawns decreased from 0.112 t per day and 0.105 t per day respectively in 2010 to 0.105 t and 0.043 t per day in 2011 (Figure 22a, c).

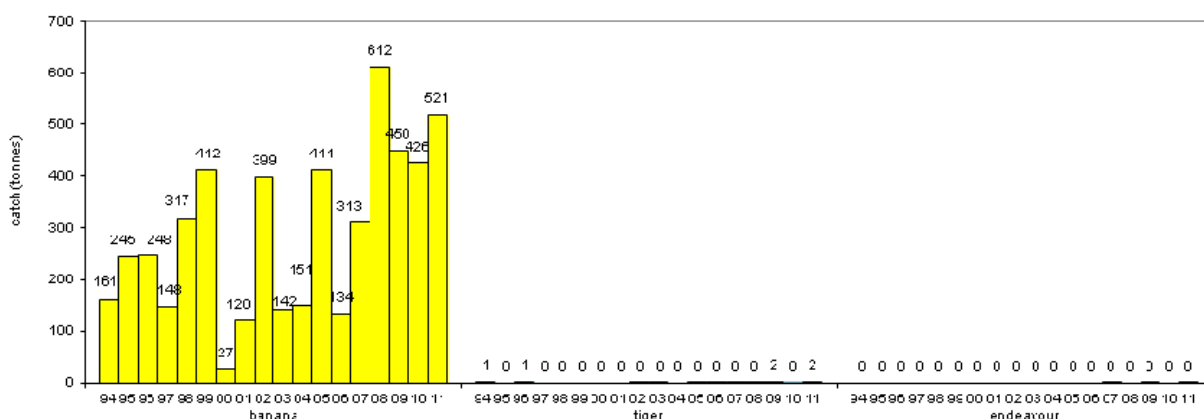


Figure 20: Catch by species in the Edward area between 1994 and 2011.

a)



b)



Figure 21: (a) Percentage catch of prawn species in the Edward area during 2011 and (b) percentage catch of prawn species in the Edward area from 1994 to 2011.

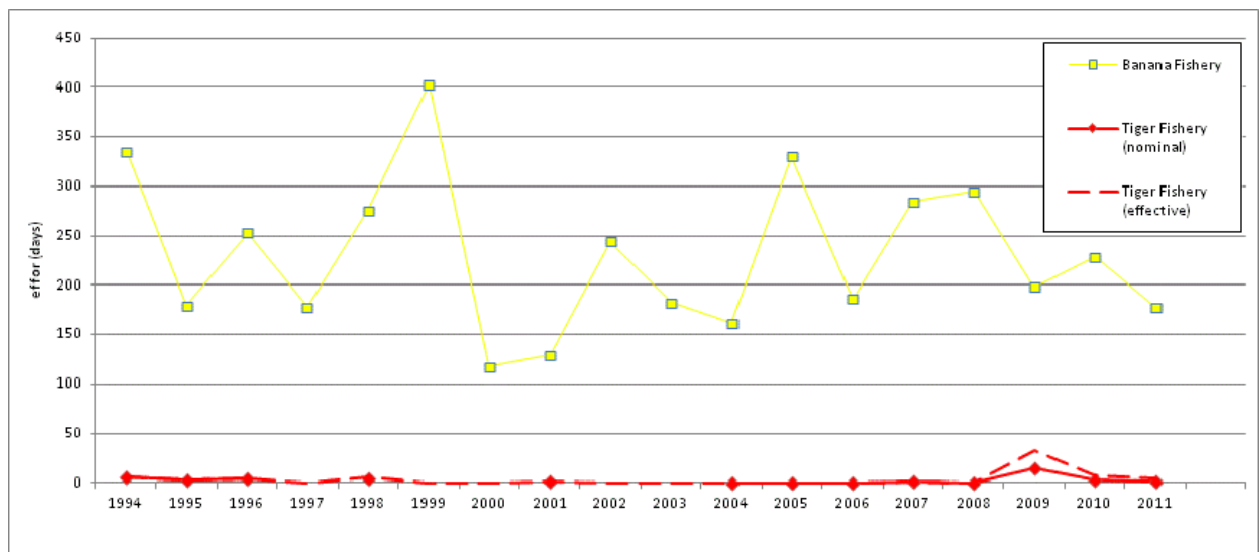


Figure 22a: Effort for the banana and tiger prawn fisheries in the Edward area between 1994 and 2011.

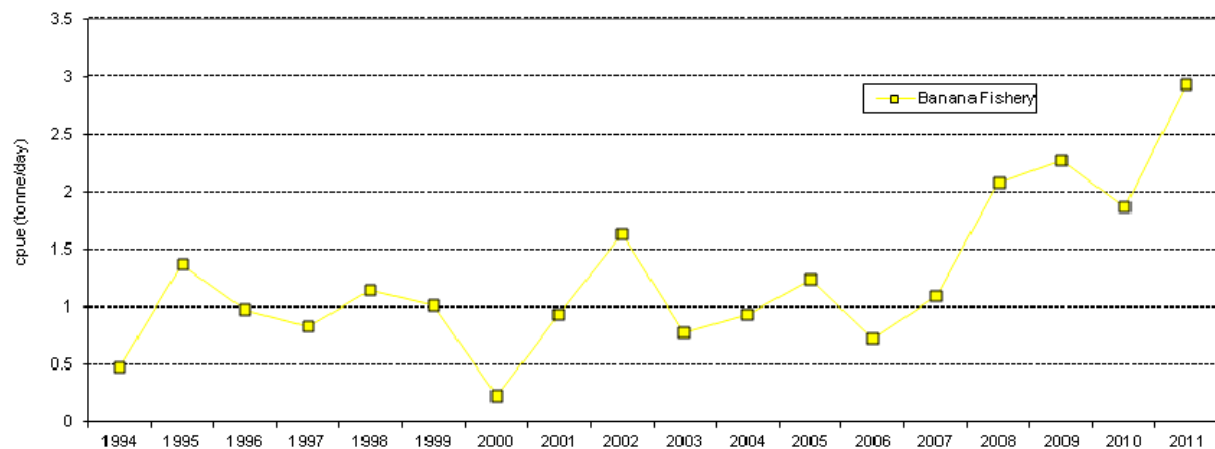


Figure 22b: Catch rate for the banana prawn fishery in the Edward area between 1994 and 2011.

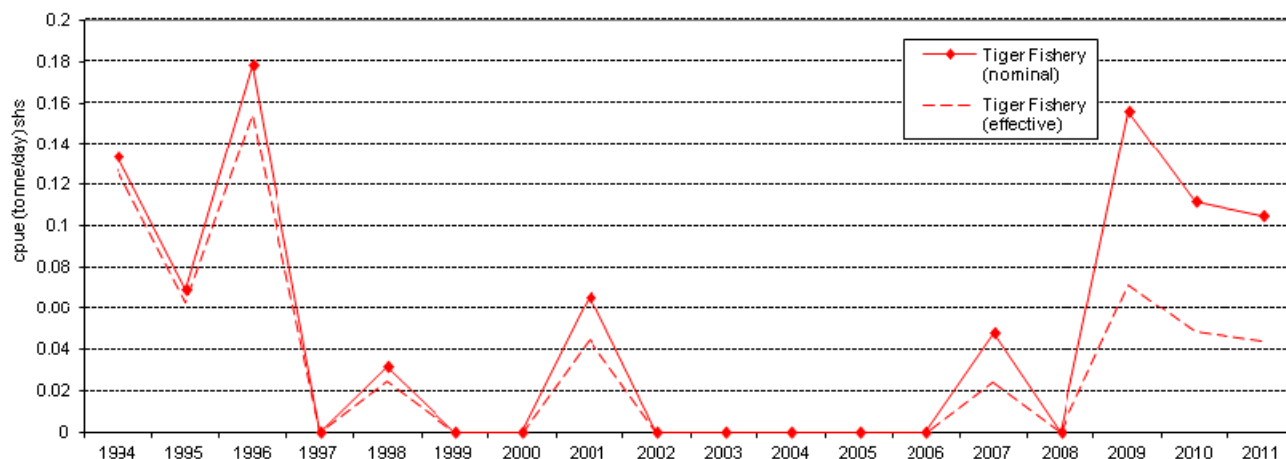


Figure 22c: Catch rate for the tiger prawn fishery in the Edward area between 1994 and 2011.

Mitchell

Banana prawn catches in the Mitchell area have remained similar in 2011 (288 t), compared to 285 t in 2010. Tiger and endeavour prawn catches remained at less than 1 t (Figure 23). Banana prawns comprised 100% of the catch in this area during 2011 (Figure 24).

Effort in the banana prawn fishery decreased from 147 days in 2010 to 107 days in 2011 (Figure 25a). CPUE of banana prawns increased from 1.940 t per day in 2010 to 2.695 t per day in 2011 (Figure 25b). There was no change in effort and CPUE in the tiger prawn fishery in 2011 (Figure 25a, c).

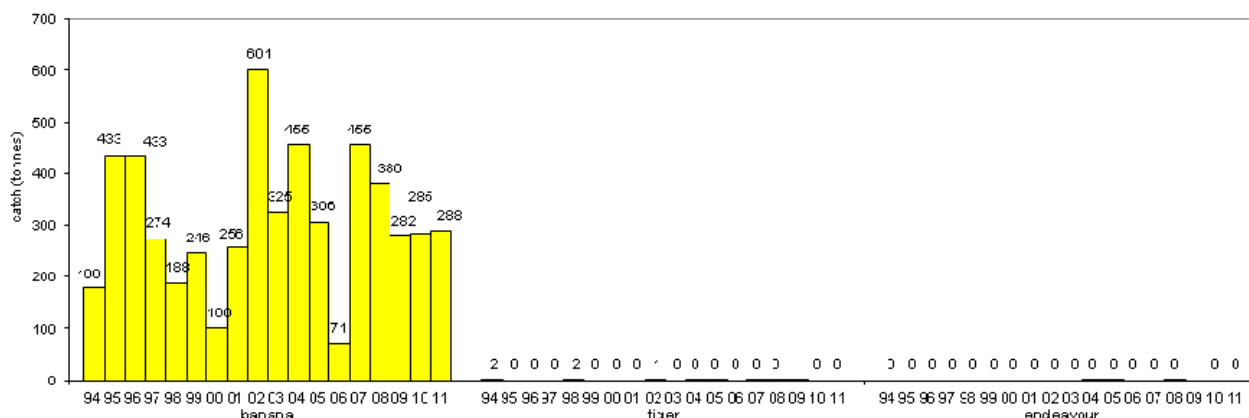


Figure 23: Catch by species in the Mitchell area between 1994 and 2011.

a)



b)



Figure 24: Percentage catch of prawn species in the Mitchell area during 2011 (a) and percentage catch of prawn species in the Mitchell area from 1994 to 2011.

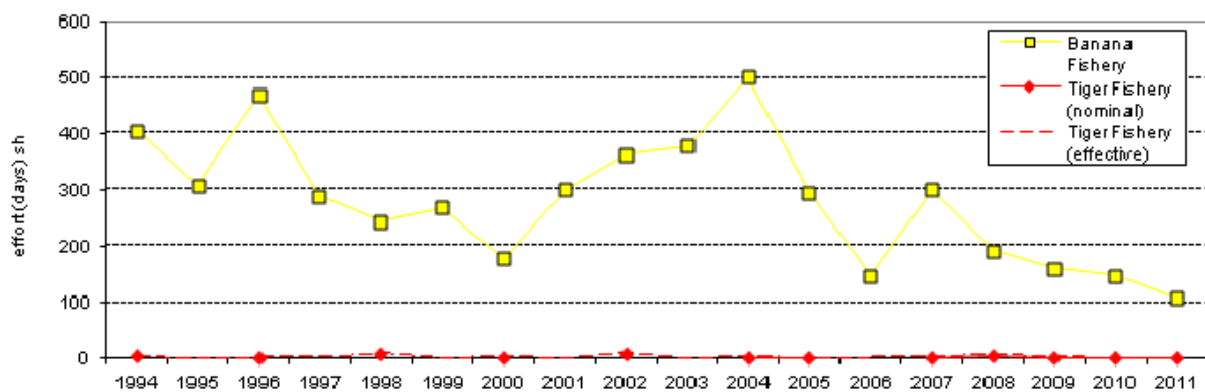


Figure 25a: Effort for the banana and tiger prawn fisheries in the Mitchell area between 1994 and 2011.

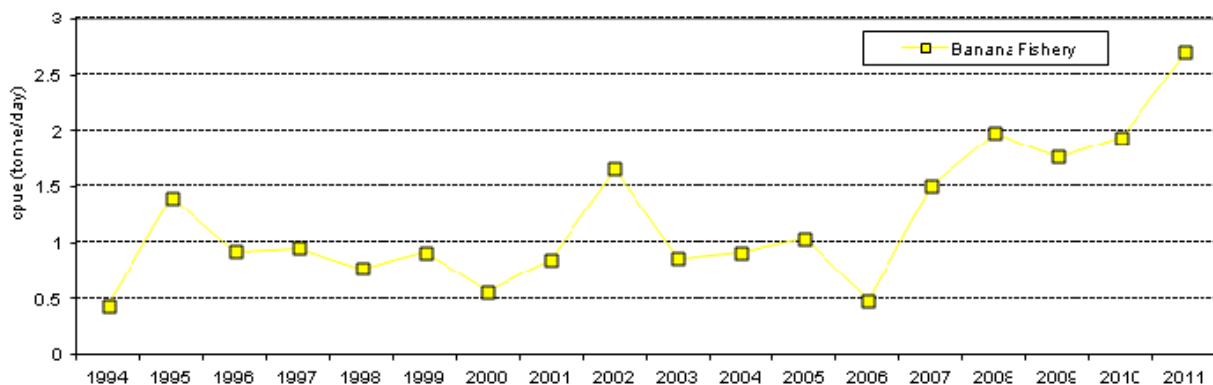


Figure 25b: Catch rate for the banana prawn fishery in the Mitchell area between 1994 and 2011.

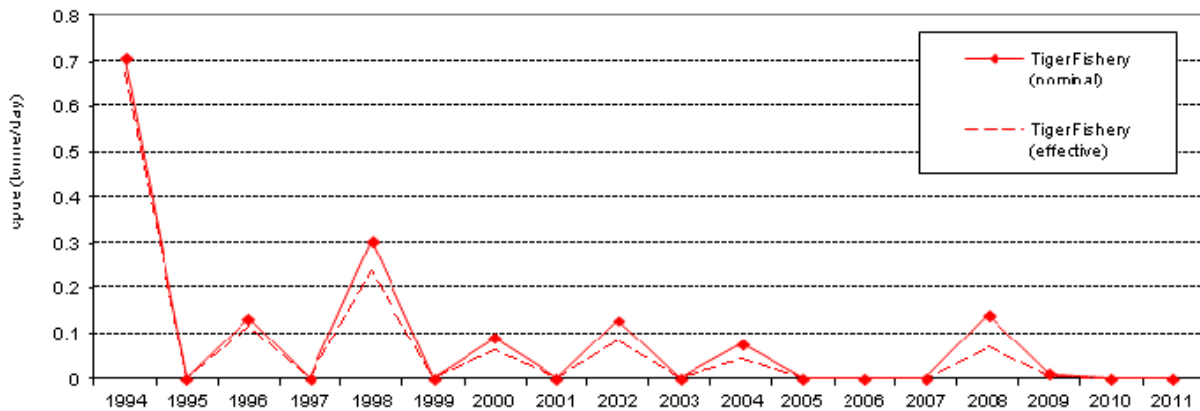


Figure 25c: Catch rate for the tiger prawn fishery in the Mitchell area between 1994 and 2011.

Bold

Banana prawn catches in the Bold area increased from 1,097 t in 2010 to 2,451 t in 2011. Catches of tiger prawns in 2011 were similar to 2010, at 46 t compared to 45 t. Endeavour prawns catches increased slightly from 16 t in 2010 to 20 t in 2011 (Figure 26). Banana prawns dominated the catch in this area in 2011, comprising 97% of the catch (Figure 27a).

Effort in the banana prawn fishery increased from 442 days in 2010 to 611 in 2011 (Figure 28a). CPUE of banana prawns increased from 2.47 t per day in 2010 to 4.01 t per day in 2011 (Figure 28b). Effort in the tiger prawn fishery increased from 87 days in 2010 to 173 in 2011 (Figure 28a). Nominal and effective CPUE of tiger prawns decreased from 0.739 t and 0.322 t per day respectively in 2010, to 0.381 and 0.175 t per day in 2011 (Figure 28c).

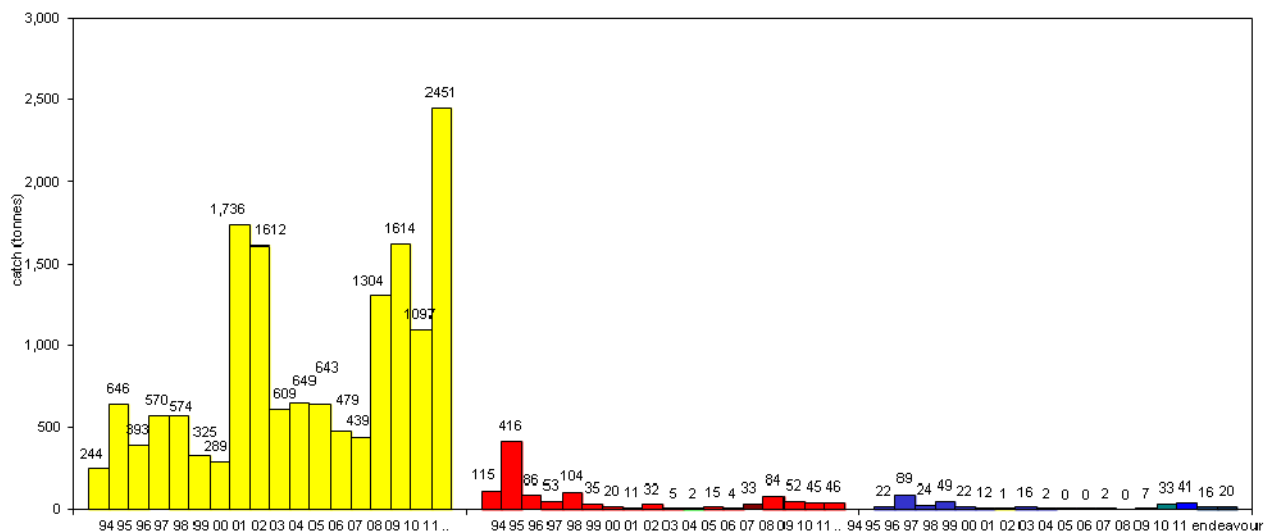
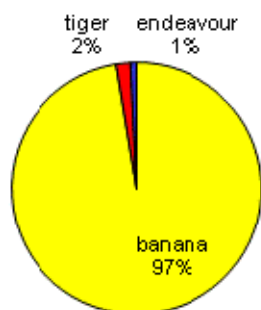


Figure 26: Catch by species in the Bold area between 1994 and 2011.

a)



b)

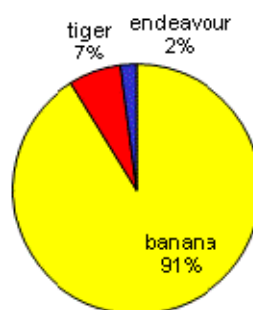


Figure 27: (a) Percentage catch of prawn species in the Bold area during 2011 and (b) catch of prawn species in the Bold area from 1994 to 2011 (b).

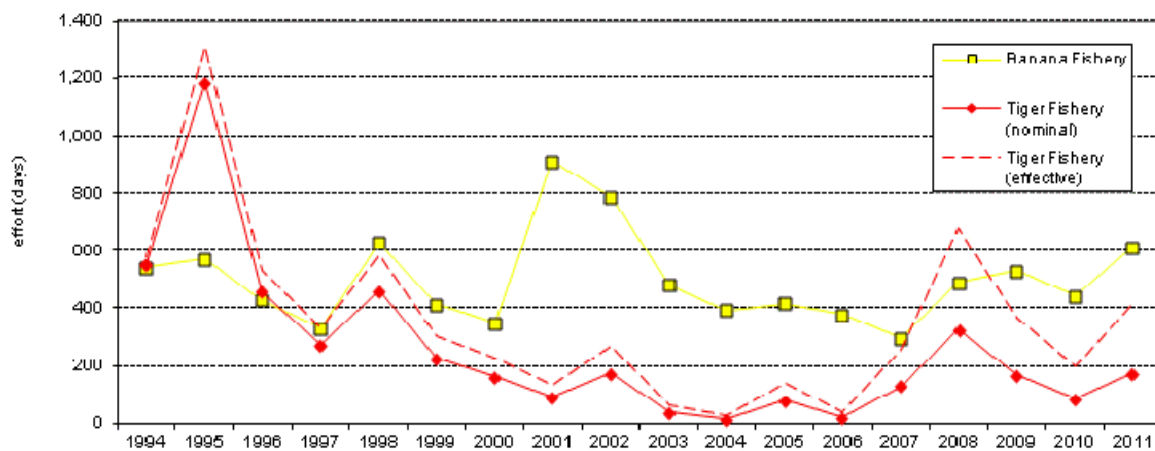


Figure 28a: Effort for the banana and tiger prawn fisheries in the Bold area between 1994 and 2011.

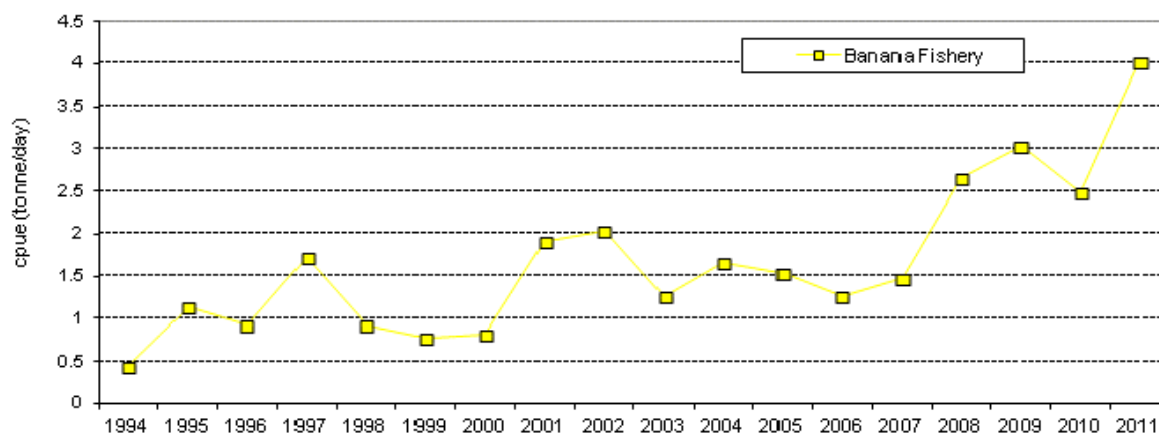


Figure 28b: Catch rate for the banana prawn fishery in the Bold area between 1994 and 2011.

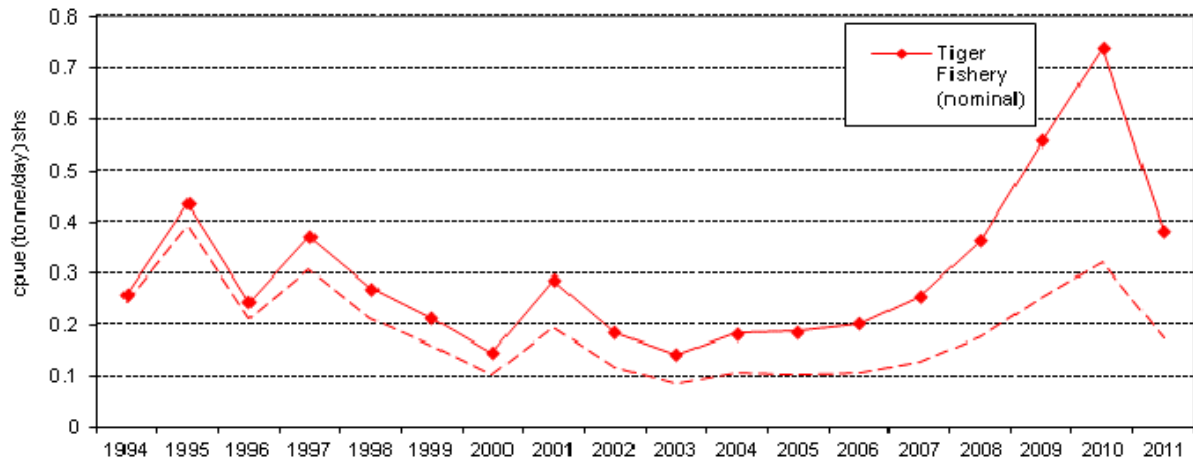


Figure 28c: Catch rate for the tiger prawn fishery in the Bold area between 1994 and 2011.

Sweers

Banana prawn catches in the Sweers area decreased from 397 t in 2010 to 379 t in 2011. Catches of tiger prawns increased from 4 t in 2010 to 90t in 2011, and endeavour prawns increased from 7 t in 2010 to 46 t in 2011 (Figure 29). Banana prawns comprised 74% of the catch for 2011 (Figure 30).

Effort in the banana fishery decreased from 179 days in 2010 to 143 days in 2011 (Figure 31a). CPUE of banana prawn increased from 2.213 t per day in 2010 to 2.652 t per day in 2011 (Figure 31b). Effort in the tiger prawn fishery increased from 22 days in 2010 to 281 days in 2011 (Figure 31a). Nominal and effective CPUE of tiger prawns for 2011 decreased slightly from 0.576 and 0.251 t per day, respectively in 2010 to 0.485 and 0.201 t per day in 2011 (Figure 31c).

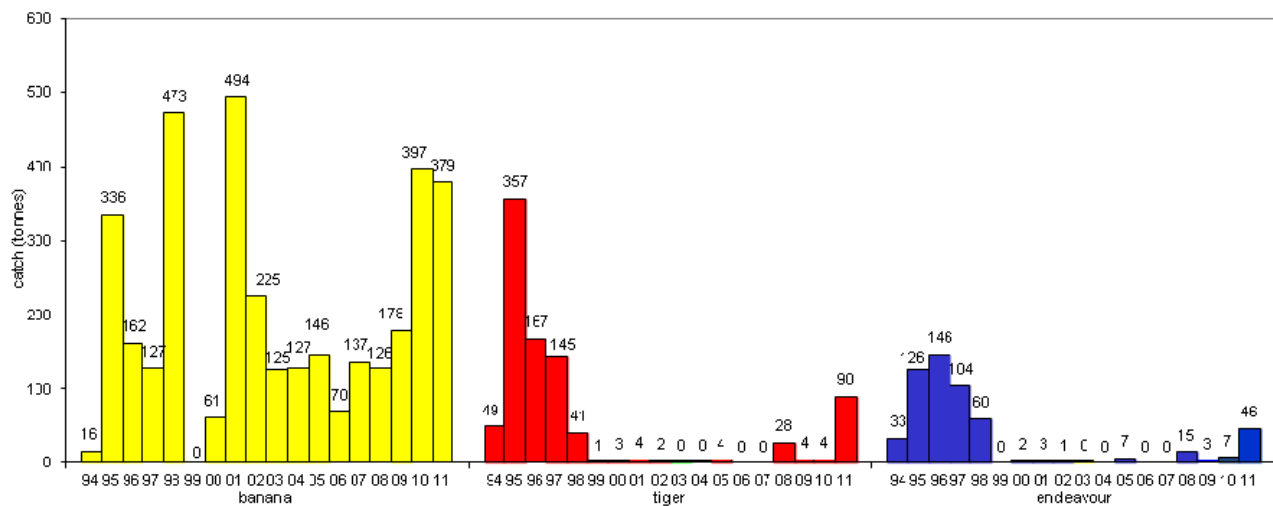
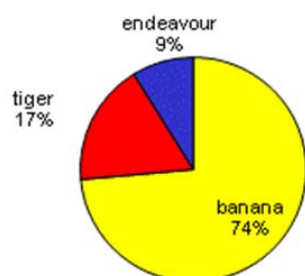


Figure 29: Catch by species in the Sweers area between 1994 and 2011.

a)



b)

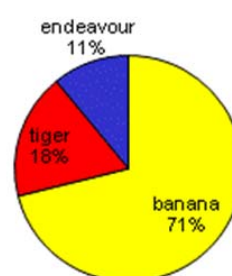


Figure 30: (a) Percentage catch of prawn species in the Sweers area during 2011, and (b) percentage catch of prawn species in the Sweers area from 1994 to 2011 (b).

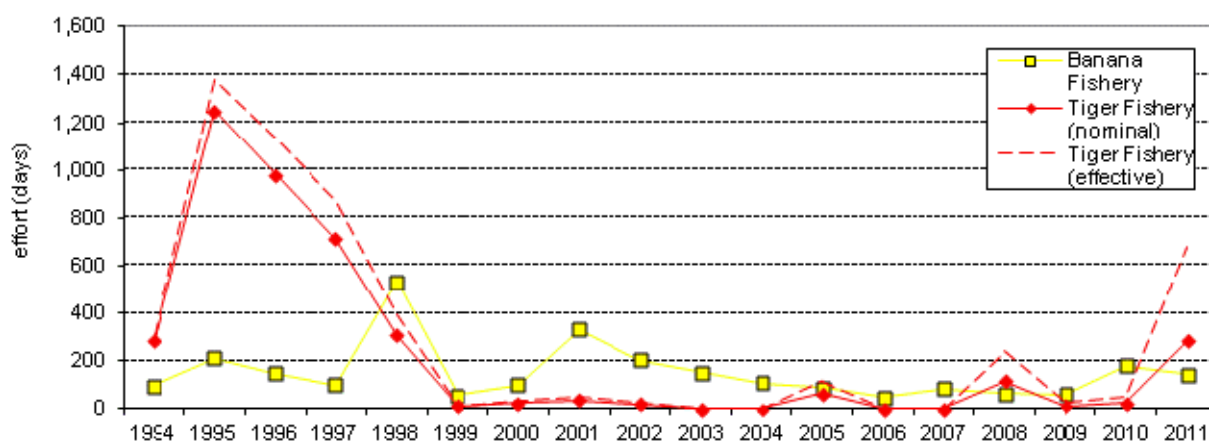


Figure 31a: Effort for the banana and tiger prawn fisheries in the Sweers area between 1994 and 2011.

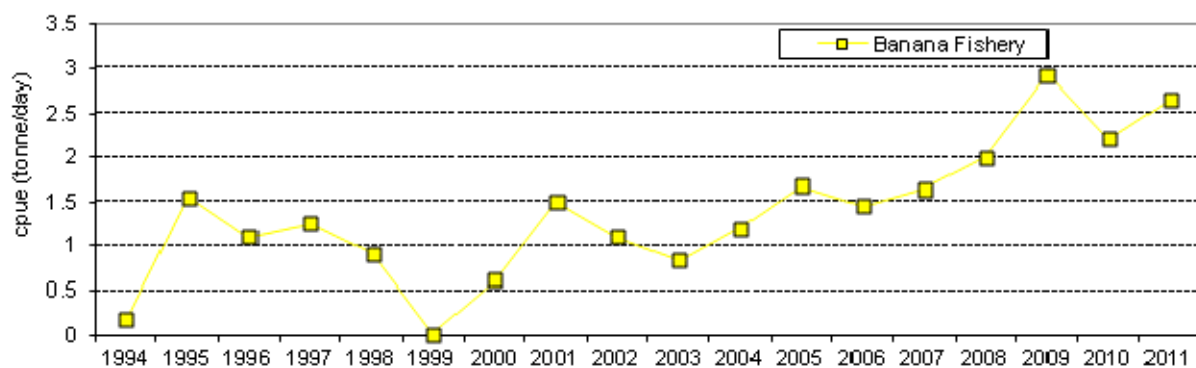


Figure 31b: Catch rate for the banana prawn fishery in the Sweers area between 1994 and 2011.

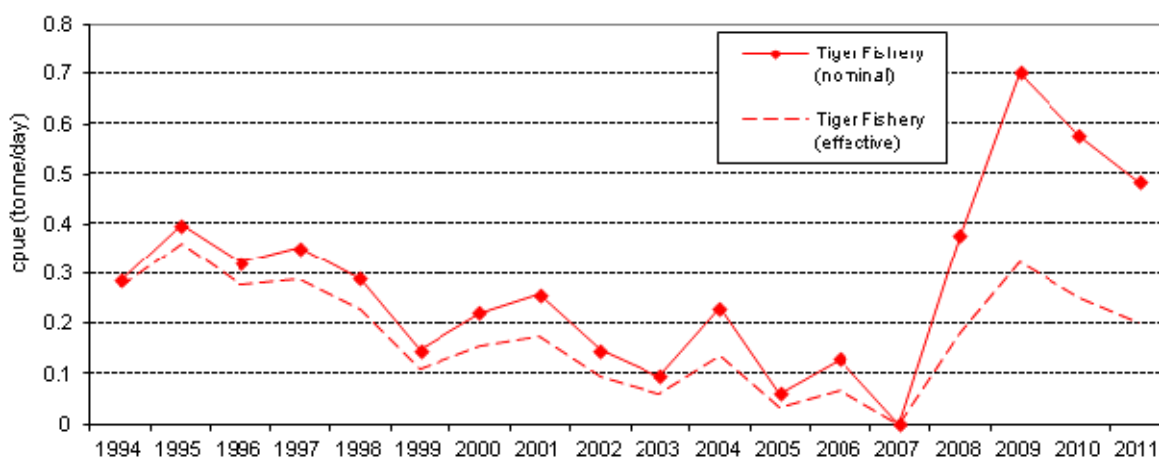


Figure 31c: Catch rate for the tiger prawn fishery in the Sweers area between 1994 and 2011.

Mornington

Banana prawn catches in the Mornington area increased from 443 t in 2010 to 806 t in 2011. Catches of tiger prawns also decreased from 199 t in 2010 to 70 t in 2011. Endeavour prawn catches reduced from 40 t in 2010 to 29 t in 2011 (Figure 32). Banana prawns dominated the catch in this area, contributing to 89% of the catch in 2011 (Figure 33).

Effort in the banana fishery increased from 258 days in 2010 to 273 in 2011 (Figure 34a). CPUE of banana prawn increased from 1.711 t per day in 2010 to 2.952 t per day in 2011 (Figure 34b). Effort in the tiger prawn fishery decreased from 528 days in 2010 to 347 in 2011 (Figure 34a). Nominal and effective CPUE of tiger prawns decreased from 0.456 t and 0.199 t per day, respectively in 2010 to 0.285 and 0.116 t per day in 2011 (Figure 34c).

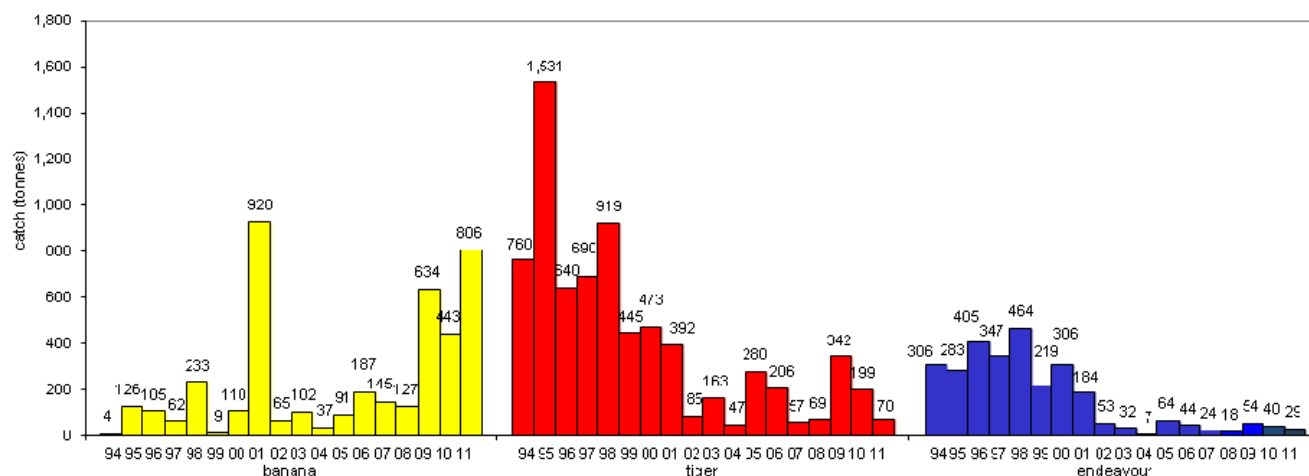
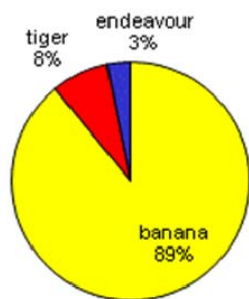


Figure 32: Catch by species in the Mornington area between 1994 and 2011.

a)



b)

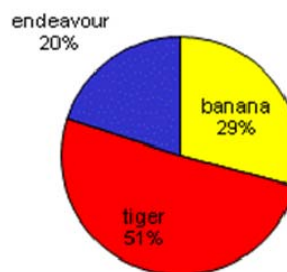


Figure 33: Percentage catch of prawn species in the Mornington area during 2011 (a) and percentage catch of prawn species in the Mornington area from 1994 to 2011 (b).

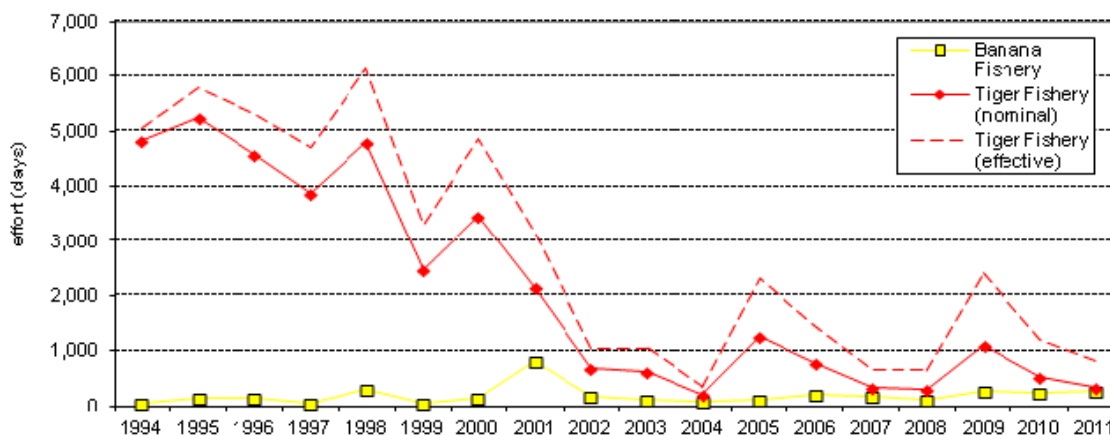


Figure 34a: Effort for the banana and tiger prawn fisheries in the Mornington area between 1994 and 2011.

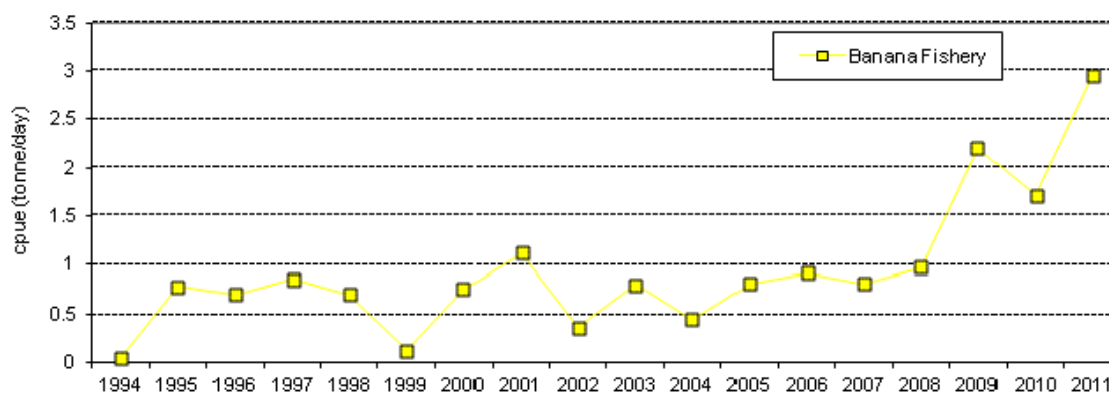


Figure 34b: Catch rate for the banana prawn fishery in the Mornington area between 1994 and 2011.

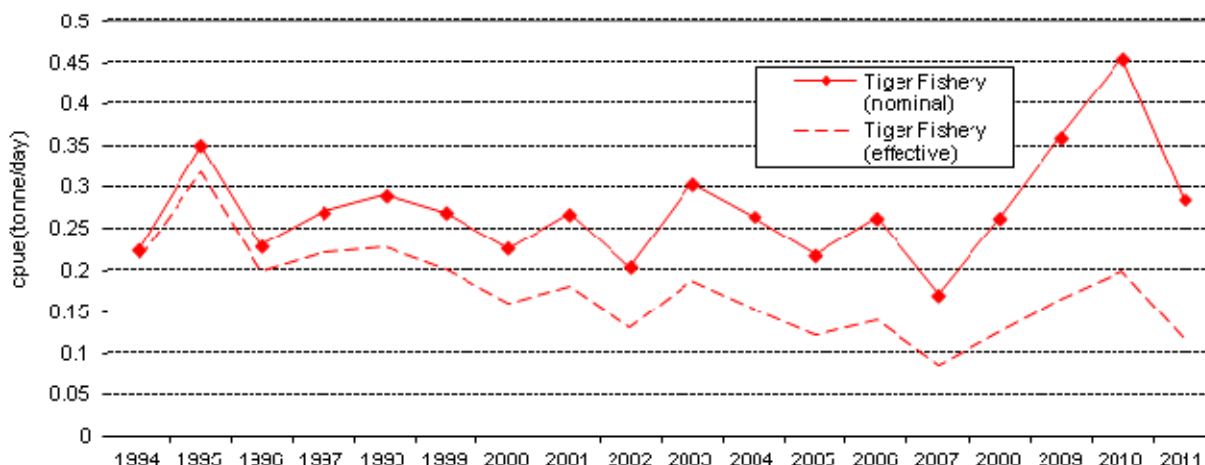


Figure 34c: Catch rate for the tiger prawn fishery in the Mornington area between 1994 and 2011.

Limmen Bight

Banana prawn catches in the Limmen Bight area decreased from 705 t in 2010 to 277 t in 2011. Catches of tiger prawns decreased from 467 t in 2010 to 184 t in 2011. Endeavour prawn catches dropped from 80 t in 2010 to 32 t in 2011 (Figure 35). Banana prawns dominated in catch for 2011 in this area, comprising 56% of the total catch (Figure 36).

Effort in the banana fishery decreased from 317 days in 2010 to 139 days in 2011 (Figure 37a). CPUE of banana prawns decreased from 2.232 t per day in 2010 to 2.003 t per day in 2011 (Figure 37b). Effort in the tiger prawn fishery decreased from 1245 days in 2010 to 891 t in 2011 (Figure 37a). Nominal and effective CPUE of tiger prawns decreased from 0.436 and 0.191 t per day in 2010 to 0.241 and 0.110 t per day, respectively in 2011 (Figure 37c).

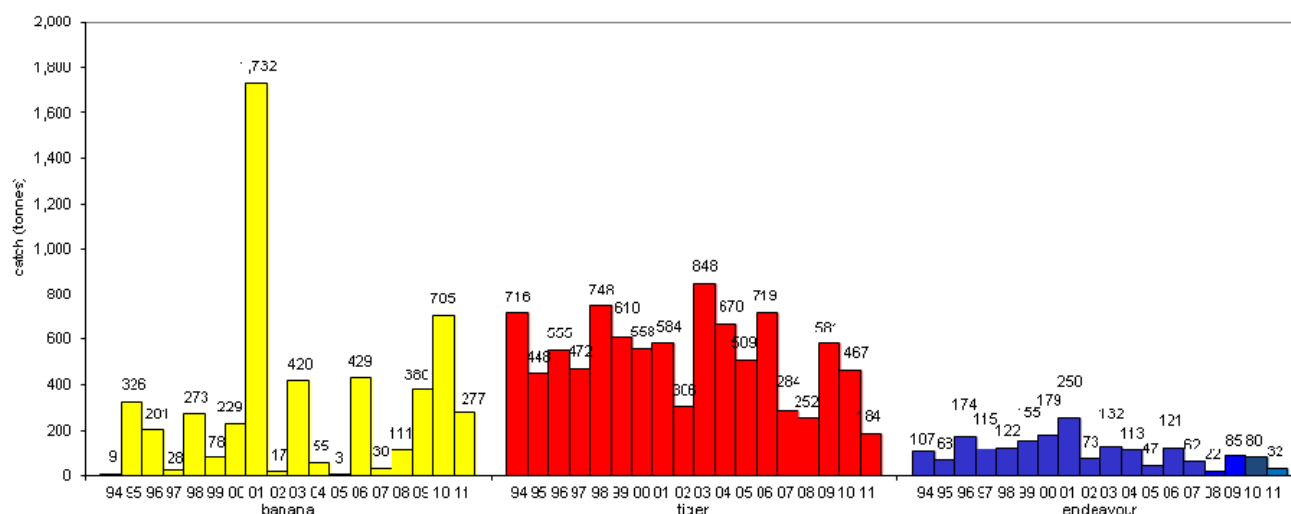
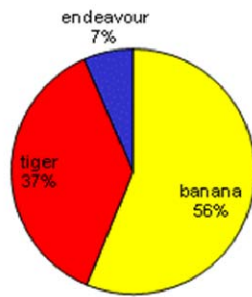


Figure 35: Catch by species in the Limmen Bight area between 1994 and 2011.

a)



b)

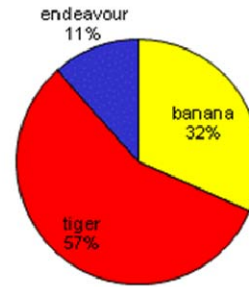


Figure 36: Percentage catch of prawn species in the Limmen Bight area during 2011 (a) and percentage catch of prawn species in the Limmen Bight area from 1994 to 2011 (b).

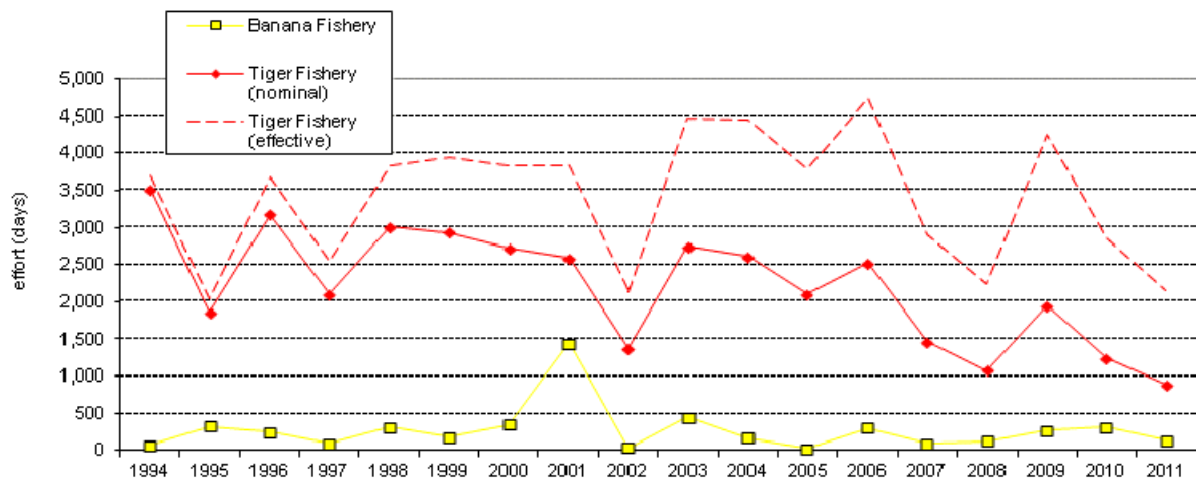


Figure 37a: Effort for the banana and tiger prawn fisheries in the Limmen Bight area between 1994 and 2011.

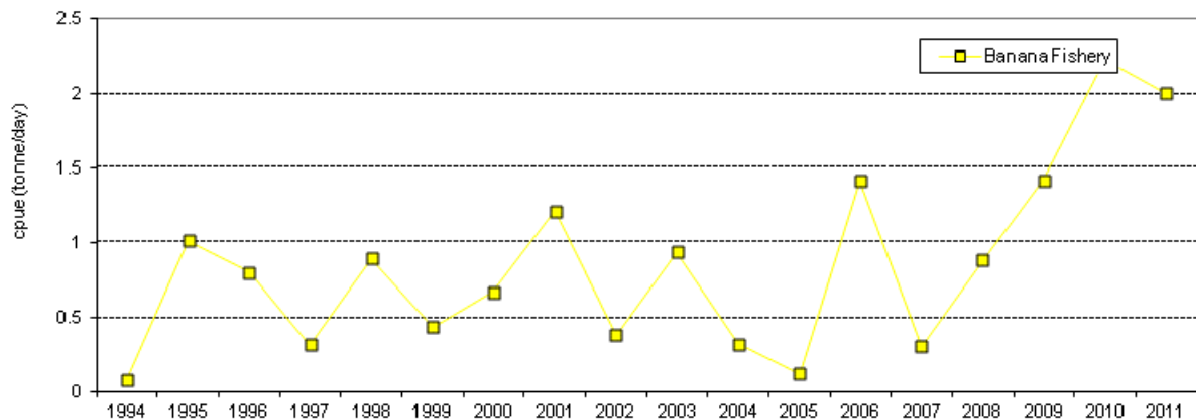


Figure 37b: Catch rate for the banana prawn fishery in the Limmen Bight area between 1994 and 2011

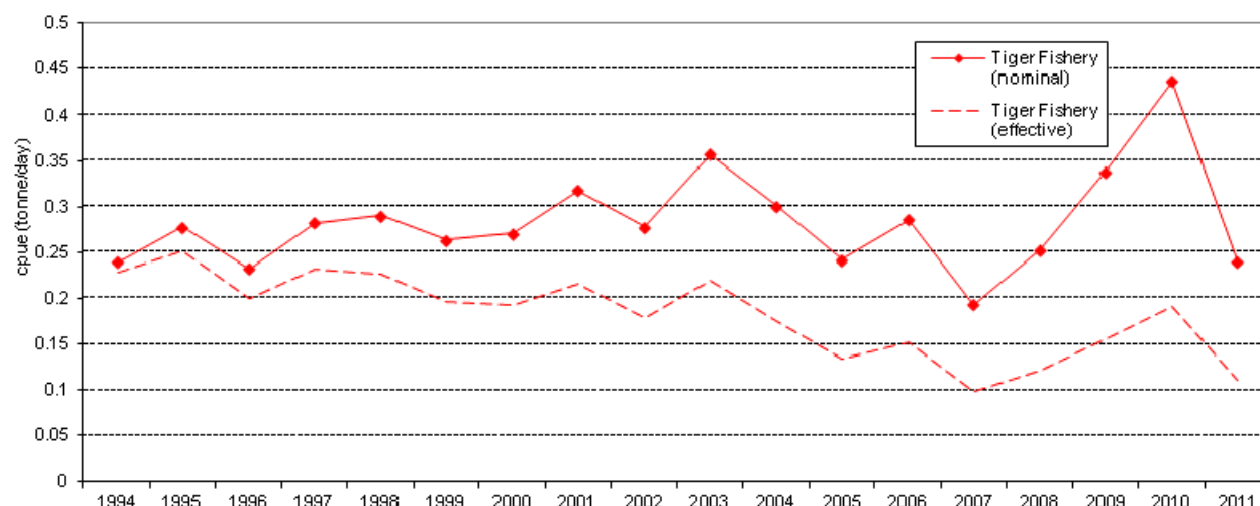


Figure 37c: Catch rate for the tiger prawn fishery in the Limmen Bight area between 1994 and 2011.

Groote

Banana prawn catches in the Groote area increased from 215 t in 2010 to 264 t in 2011. Catches of tiger prawns decreased from 618 t in 2010 to 191 t in 2011. Endeavour prawn catches decreased from 207 t in 2010 to 103 t in 2011 (Figure 38). In 2011, prawn catch comprised of 34% tiger prawns, 47% banana prawns and 19% endeavour prawns (Figure 39).

Effort in the banana fishery increased from 235 days in 2010 to 380 in 2011 (Figure 40a). CPUE of banana prawns decreased from 0.964 t per day in 2010 to 0.759 t per day in 2011 (Figure 40c). Effort in the tiger prawn fishery decreased from 2059 days in 2010 to 1045 days in 2011 (Figure 40a). Nominal and effective CPUE of tiger prawns decreased from 0.395 and 0.172 t per day in 2010 to 0.259 and 0.106 t per day in 2011, respectively (Figure 40b).

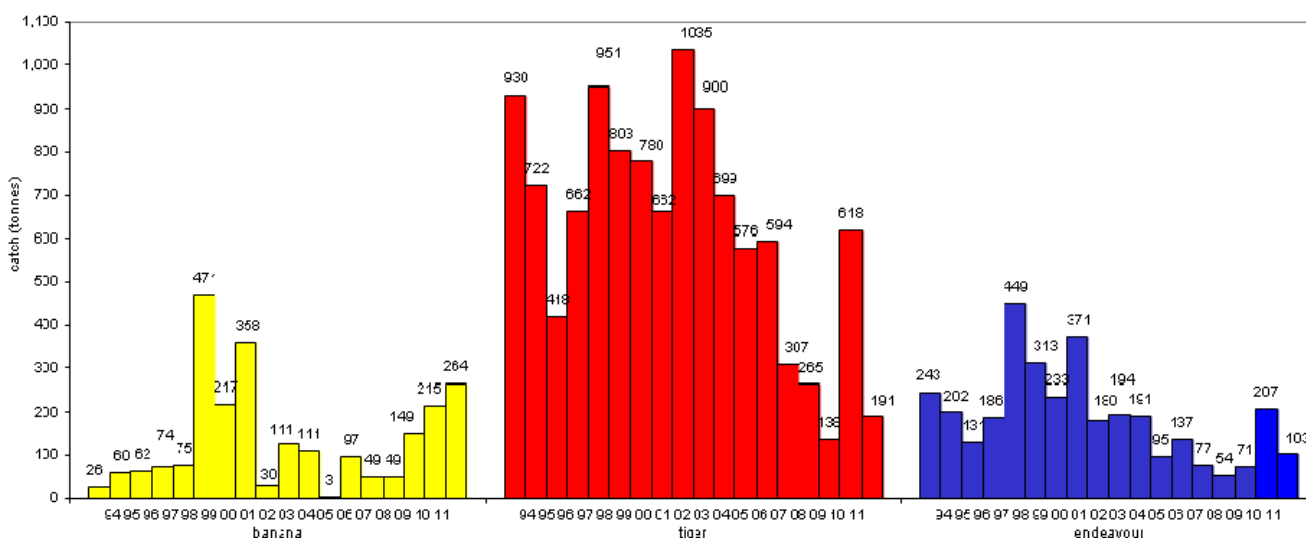
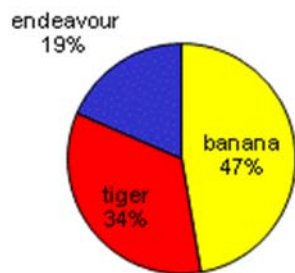


Figure 38: Catch by species in the Groote area between 1994 and 2011.

a)



b)

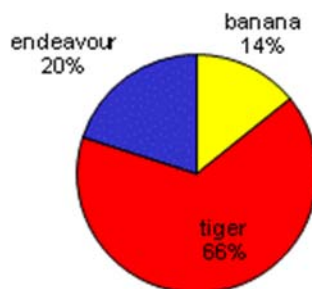


Figure 39: Percentage catch of prawn species in the Limmen Bight area during 2011 (a) and percentage catch of prawn species in the Groote area from 1994 to 2011 (b).

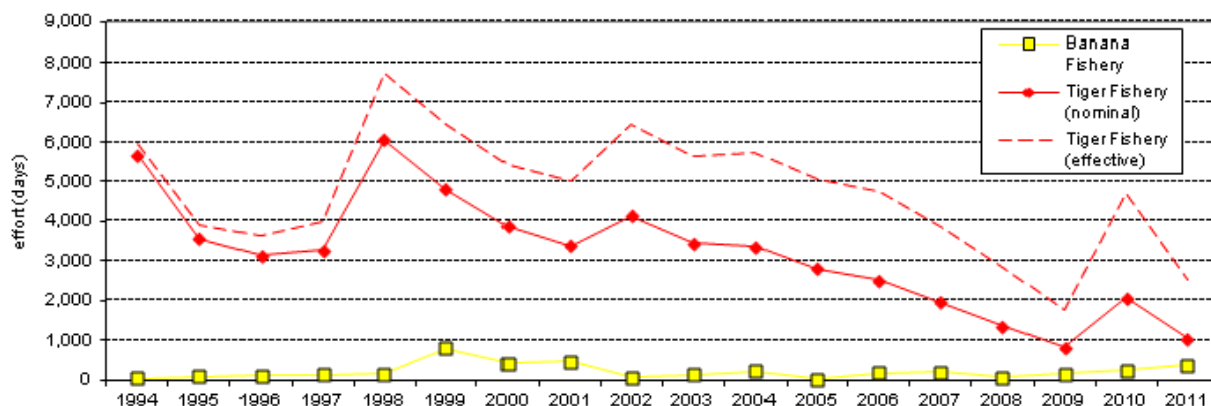


Figure 40a: Effort for the banana and tiger prawn fisheries in the Groote area between 1994 and 2011.

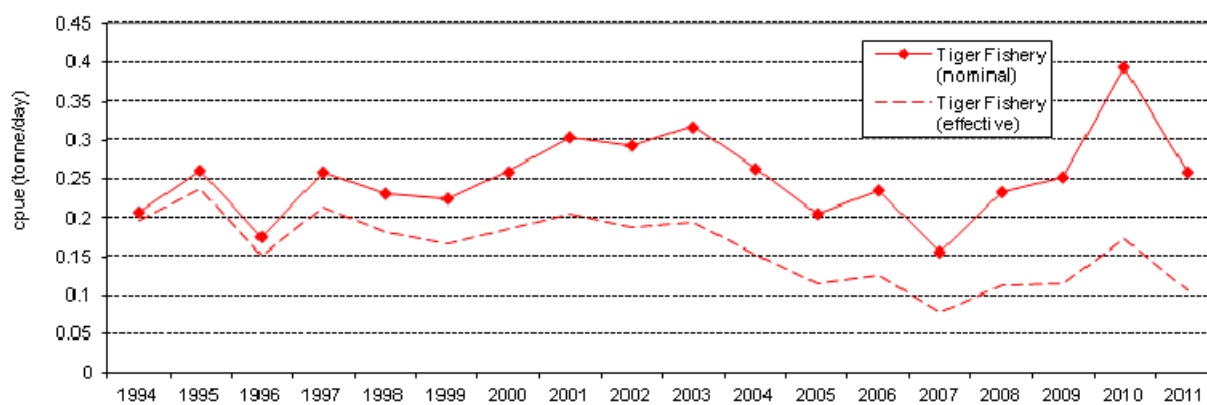


Figure 40b: Catch rate for the tiger prawn fishery in the Groote area between 1994 and 2011.

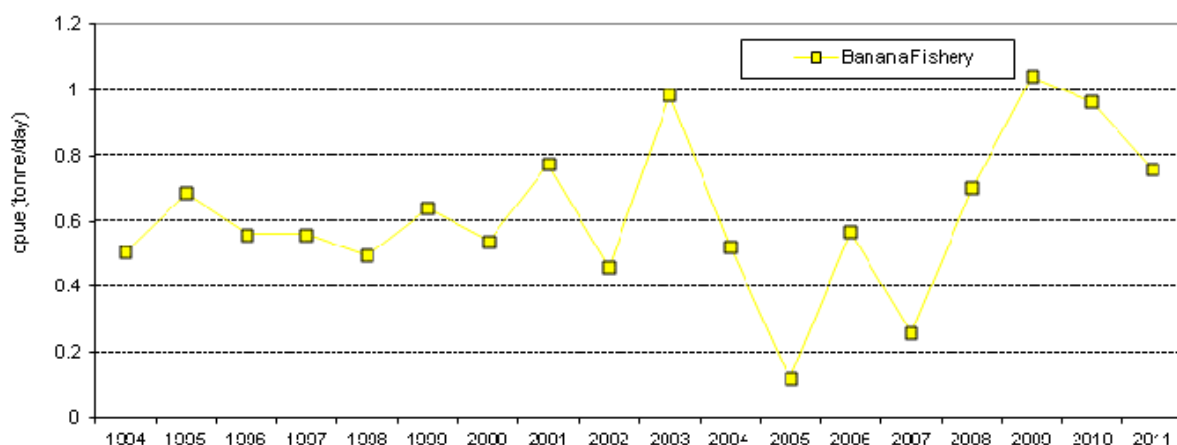


Figure 40c: Catch rate for the banana prawn fishery in the Groote area between 1994 and 2011.

Gove

Banana prawn catches in the Gove area increased from 68 t in 2010 to 97 t in 2011. Catches of tiger prawns decreased from 241 t in 2010 to 83 t in 2011, while endeavour prawn catches increased slightly from 35 t in 2010 to 47 t in 2011 (Figure 41). Banana prawns dominated the catch from this area in 2011, contributing to 43% of the catch, with tiger prawns comprising 36% and endeavour prawns the remaining 21% (Figure 42).

Effort in the banana fishery increased from 51 days in 2010 (Figure 43a) to 100 in 2011. CPUE of banana prawns decreased from 1.291 t per day in 2010 to 0.946 t per day in 2011 (Figure 43b). Effort in the tiger prawn fishery decreased from 706 days in 2010 to 501 days in 2011 (Figure 43a). Nominal and effective CPUE for tiger prawns decreased from 0.393 and 0.171 t per day respectively in 2010 to 0.265 and 0.110 t per day in 2011 (Figure 43c).

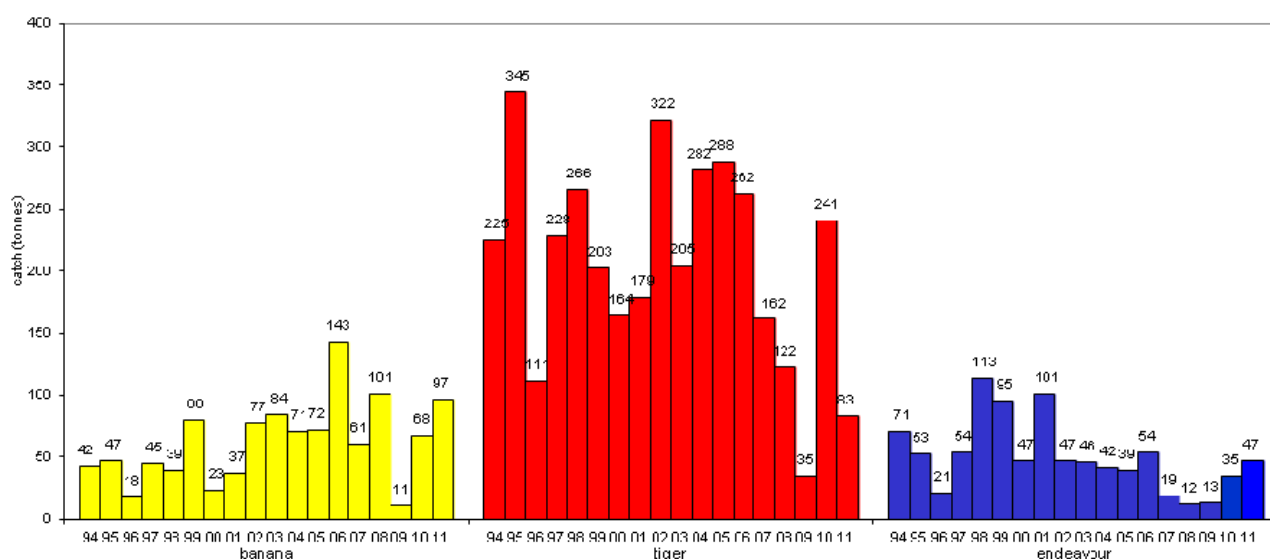
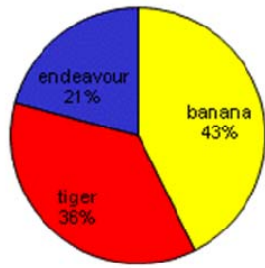


Figure 41: Catch by species in the Gove area between 1994 and 2011.

a)



b)

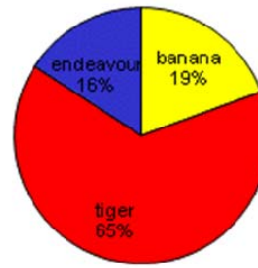


Figure 42: Percentage catch of prawn species in the Gove area during 2011 (a) and percentage catch of prawn species in the Gove area from 1994 to 2011 (b).

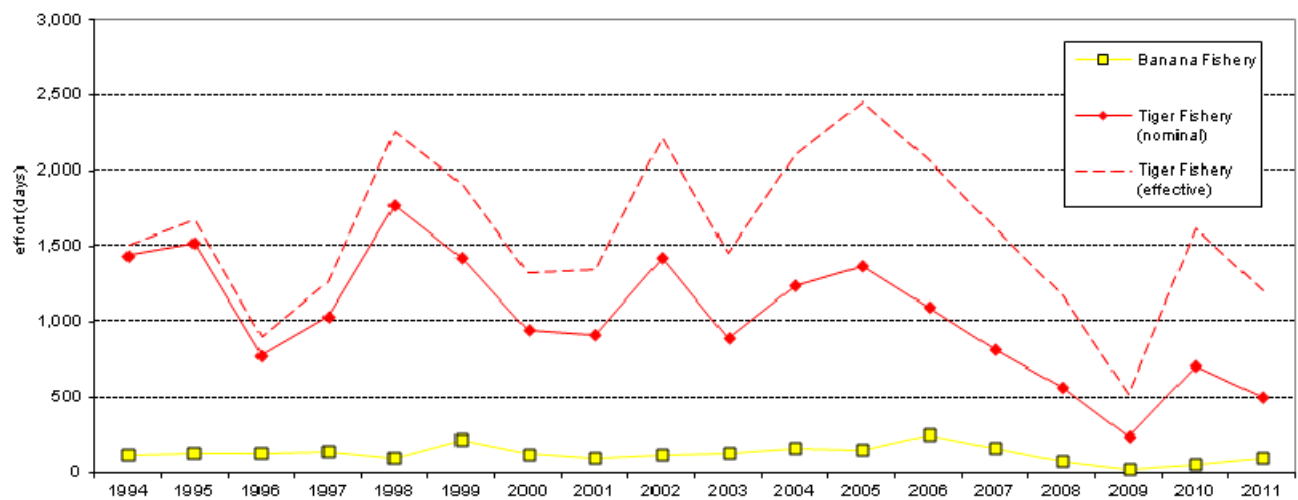


Figure 43a: Effort for the banana and tiger prawn fisheries in the Gove area between 1994 and 2011.

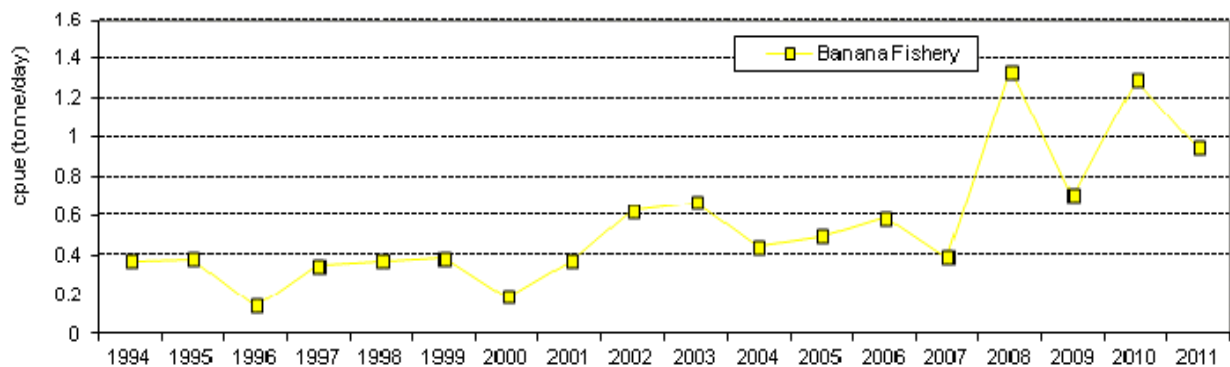


Figure 43b: Catch rate for the banana prawn fishery in the Gove area between 1994 and 2011.

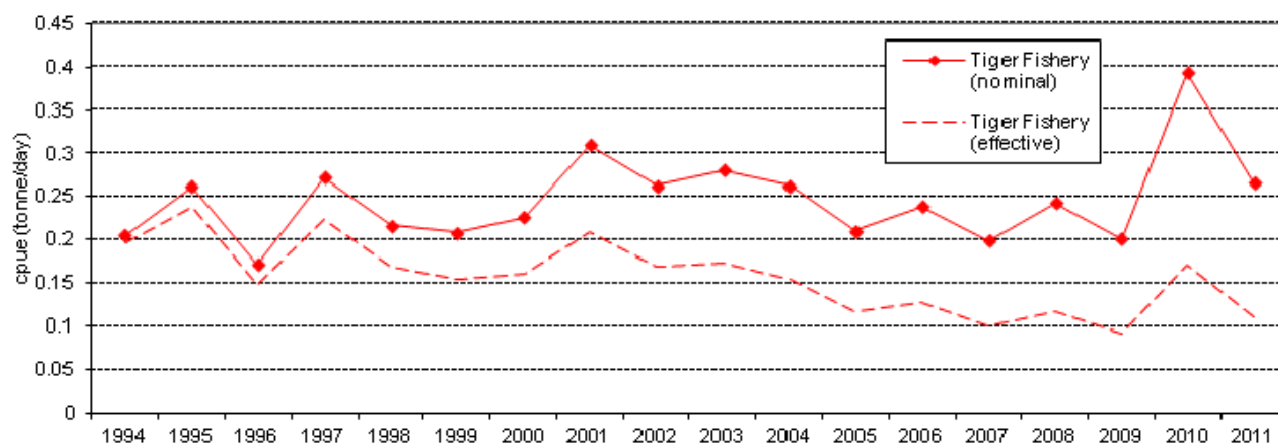


Figure 43c: Catch rate for the tiger prawn fishery in the Gove area between 1994 and 2011.

Arnhem

Banana prawn catches in the Arnhem area decreased from 258 t in 2010 to 243 t in 2011. Catches of tiger prawns increased from 4 t in 2010 to 8 t in 2011. 2 t of endeavour prawns were caught in 2011, compared to less than 1 t in 2010 (Figure 44). Banana prawns dominated the catch for 2011, contributing to 96% of the catch (Figure 45).

Effort in the banana fishery decreased from 124 days in 2010 to 98 days in 2011 (Figure 46a). CPUE of banana prawns increased from 2.078 t per day in 2010 to 2.473 t per day in 2011 (Figure 46b). Effort in the tiger prawn fishery increased from 17 days in 2010 to 48 days in 2011 (Figure 46a). Nominal and effective CPUE of tiger prawns decreased from 0.214 and 0.093 t per day in 2010, to 0.207 and 0.086 t per day in 2011, respectively (Figure 46c).

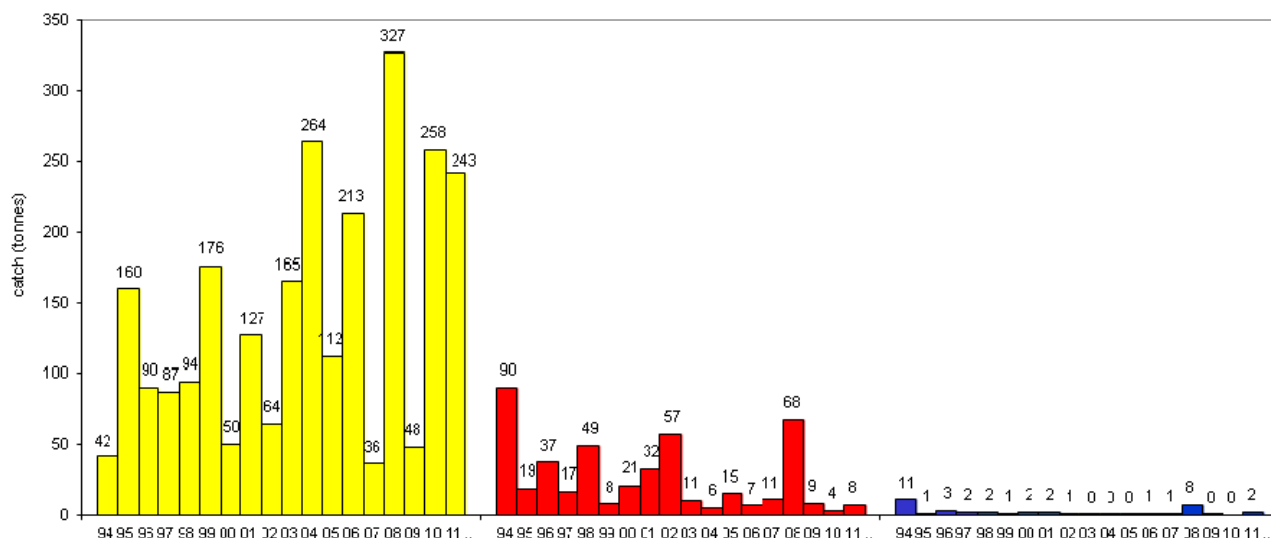
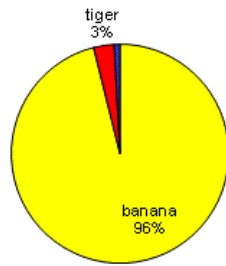


Figure 44: Catch by species in the Arnhem area between 1994 and 2011.

a)



b)

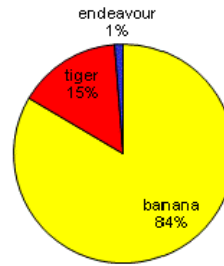


Figure 45: Percentage catch of prawn species in the Arnhem area during 2011 (a) and percentage catch of prawn species in the Arnhem area from 1994 to 2011 (b).

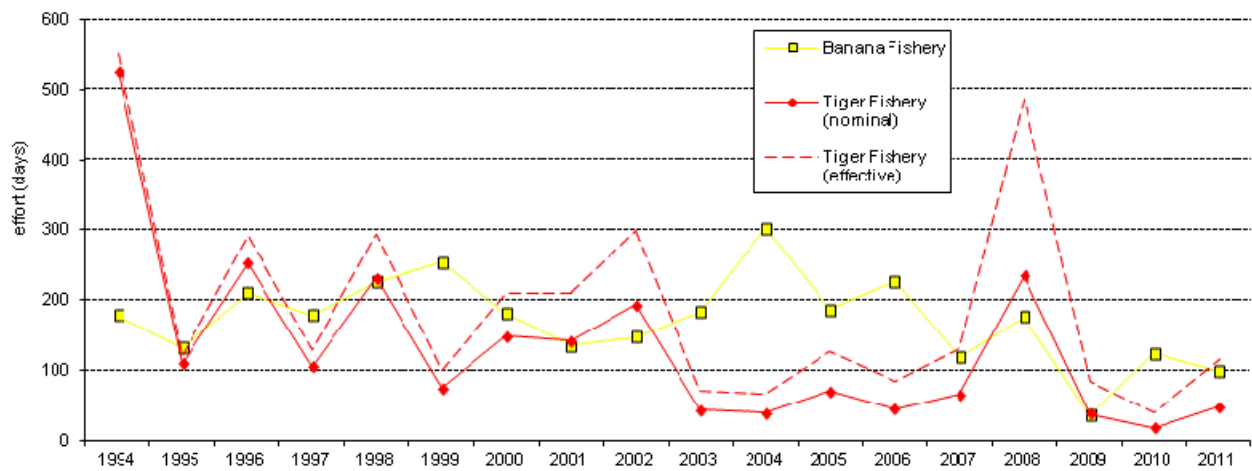


Figure 46a: Effort for the banana and tiger prawn fisheries in the Arnhem area between 1994 and 2011.

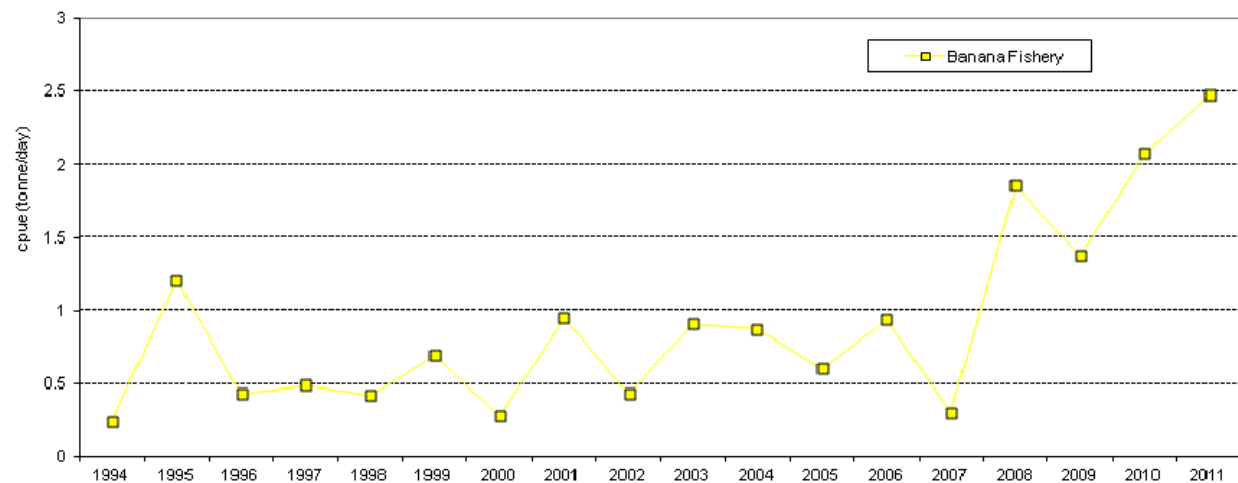


Figure 46b: Catch rate for the banana prawn fishery in the Arnhem area between 1994 and 2011.

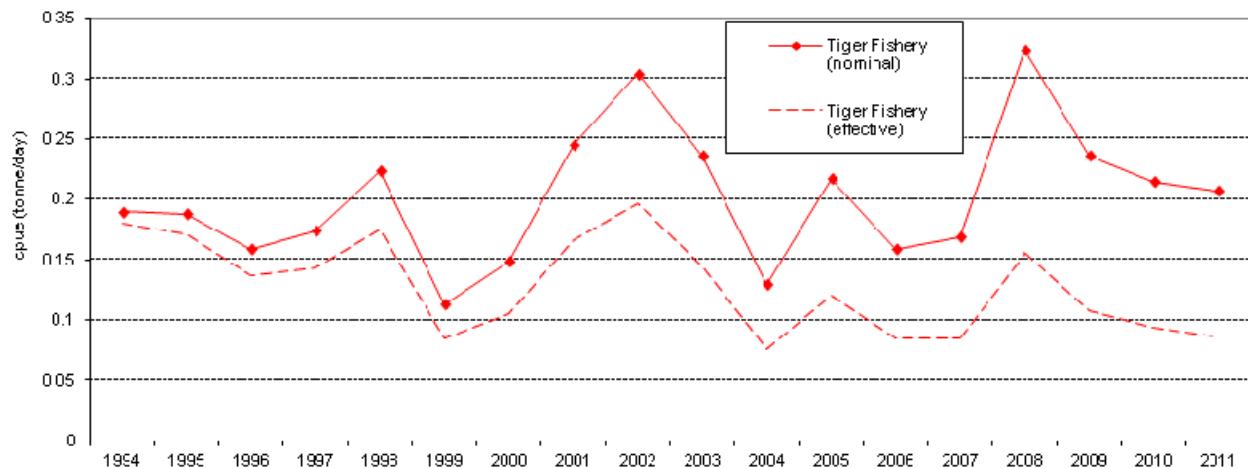


Figure 46c: Catch rate for the tiger prawn fishery in the Arnhem area between 1994 and 2011.

Port Essington

Banana prawn catches in the Port Essington area decreased from 254 t in 2010 to 243 t in 2011. Tiger prawn catches increased from 8 t in 2010 to 21 t in 2011. Endeavour prawn catches increased from 3 t in 2010 to 27 t in 2011 (Figure 47). Banana prawns dominated catches in 2011, comprising 84% of prawn catches from the Port Essington area. Tiger prawns made up 7% of catches, and endeavour prawns, the remaining 9% (Figure 48).

Effort in the banana fishery increased from 208 days in 2010 to 236 days in 2011 (Figure 49a). CPUE of banana prawns decreased from 1.246 t per day in 2010 to 1.066 t per day in 2011 (Figure 49b). Effort in the tiger prawn fishery increased from 18 days in 2010 to 92 days in 2011 (Figure 49a). Nominal and effective CPUE of tiger prawns increased from 0.323 and 0.141 t per day in 2010 to 0.437 and 0.182 t per day in 2011, respectively (Figure 49c).

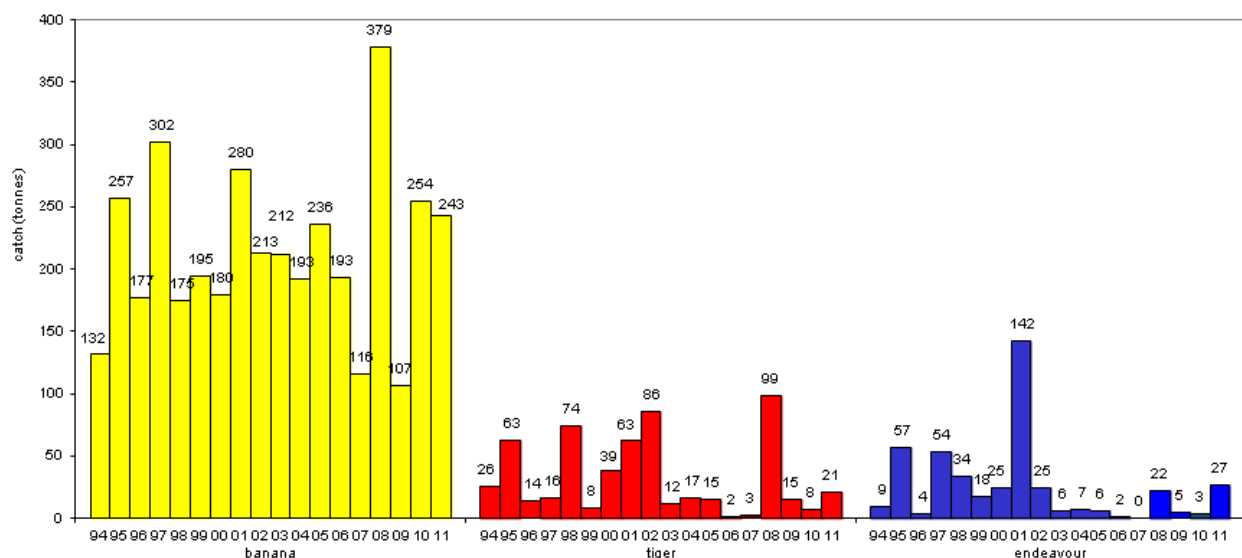
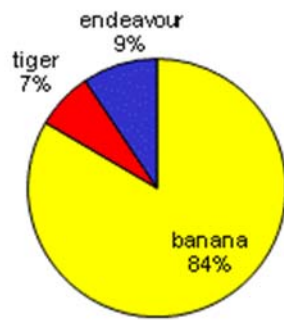


Figure 47: Catch by species in the Port Essington area between 1994 and 2011.

a)



b)

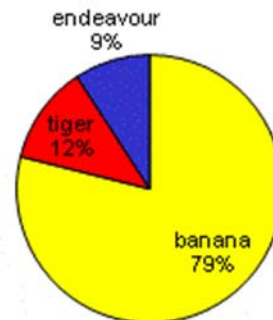


Figure 48: (a) Percentage catch of prawn species in the Port Essington area during 2011, and (b) percentage catch of prawn species in the Port Essington area from 1994 to 2011.

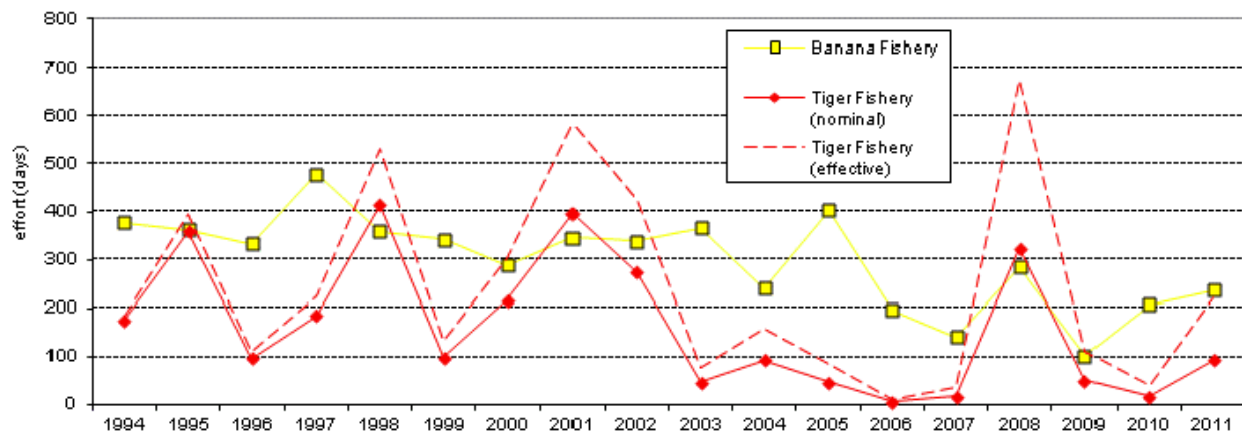


Figure 49a: Effort for the banana and tiger prawn fisheries in the Port Essington area between 1994 and 2011.

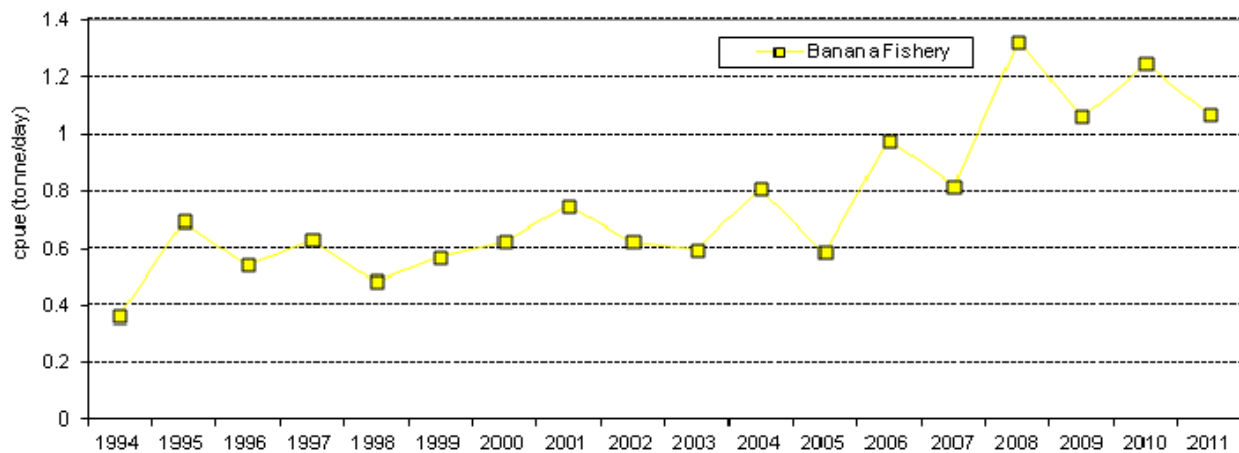


Figure 49b: Catch rate for the banana prawn fishery in the Port Essington area between 1994 and 2011.

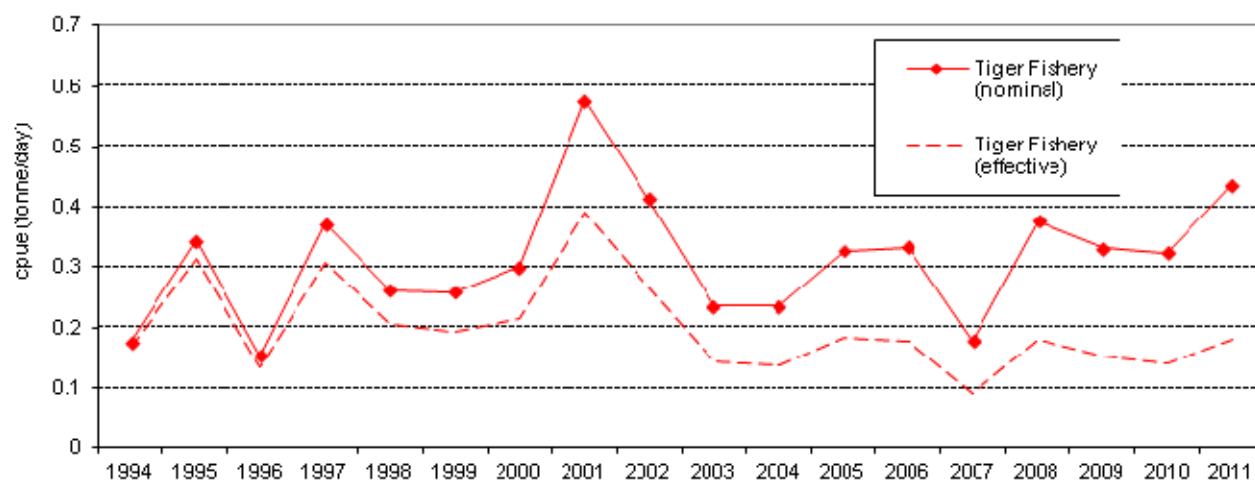


Figure 49c: Catch rate for the tiger prawn fishery in the Port Essington area between 1994 and 2011.

Melville

Banana prawn catches in the Melville area increased from 343 t in 2010 to 356 t in 2011. Catches of tiger prawns went from 4 t in 2010 to 2 t in 2011. Endeavour prawn catches increased from 3 t in 2010 to 13 t in 2011 (Figure 50). Banana prawns comprised 96% of the catch in 2011 (Figure 51).

Effort in the banana fishery decreased from 294 days in 2010 to 259 in 2011 (Figure 52a). CPUE for banana prawns increased from 1.186 t per day in 2010 to 1.384 in 2011 (Figure 52b). Effort in the tiger prawn fishery increased from 7 days in 2010 to 19 days in 2011 (Figure 52a). Nominal and effective CPUE for tiger prawns increased from 0.172 and 0.075 t per day, respectively in 2010 to 0.660 and 0.274 t per day in 2011 (Figure 52c).

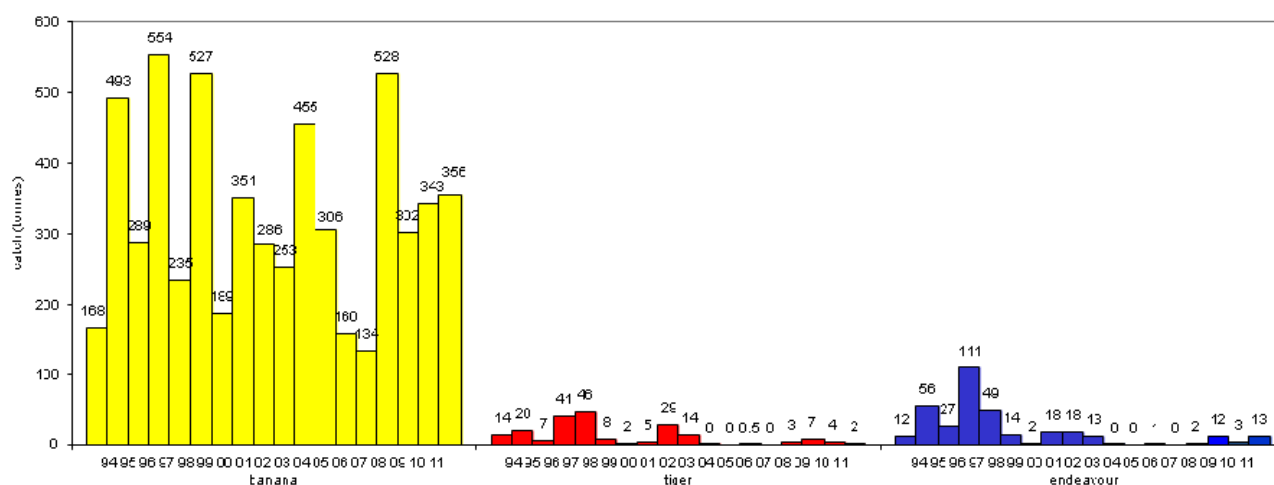


Figure 50: Catch by species in the Melville area between 1994 and 2011.

a)



Figure 51: (a) Percentage catch of prawn species in the Melville area during 2011, and (b) percentage catch of prawn species in the Melville area from 1994 to 2011.

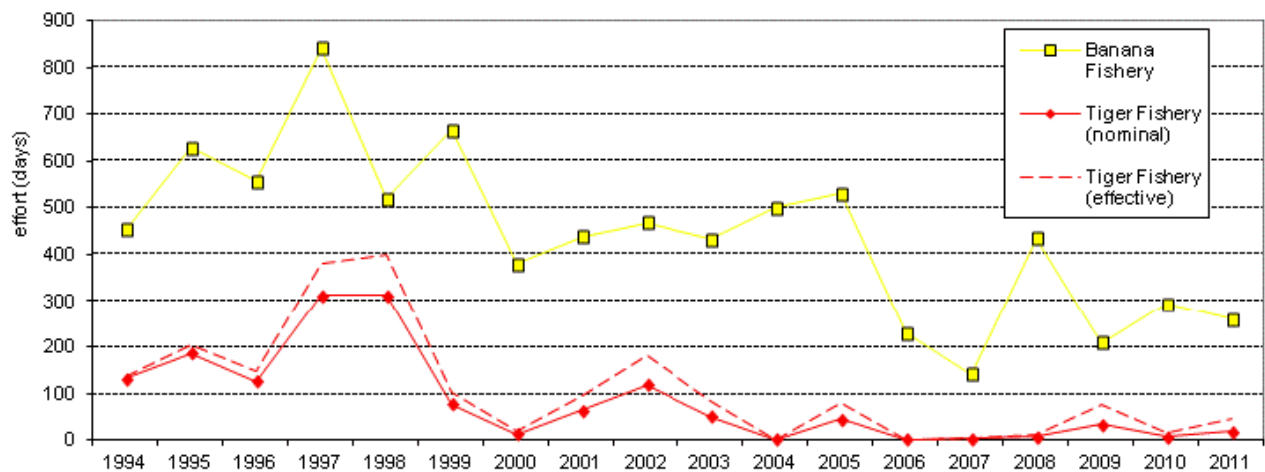


Figure 52a: Effort for the banana and tiger prawn fisheries in the Melville area between 1994 and 2011.

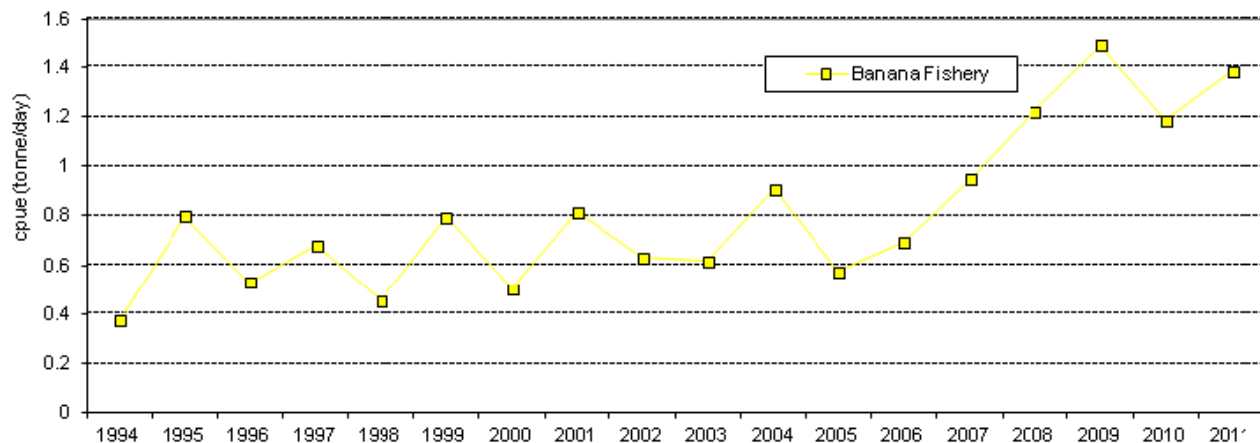


Figure 52b: Catch rate for the banana prawn fishery in the Melville area between 1994 and 2011.

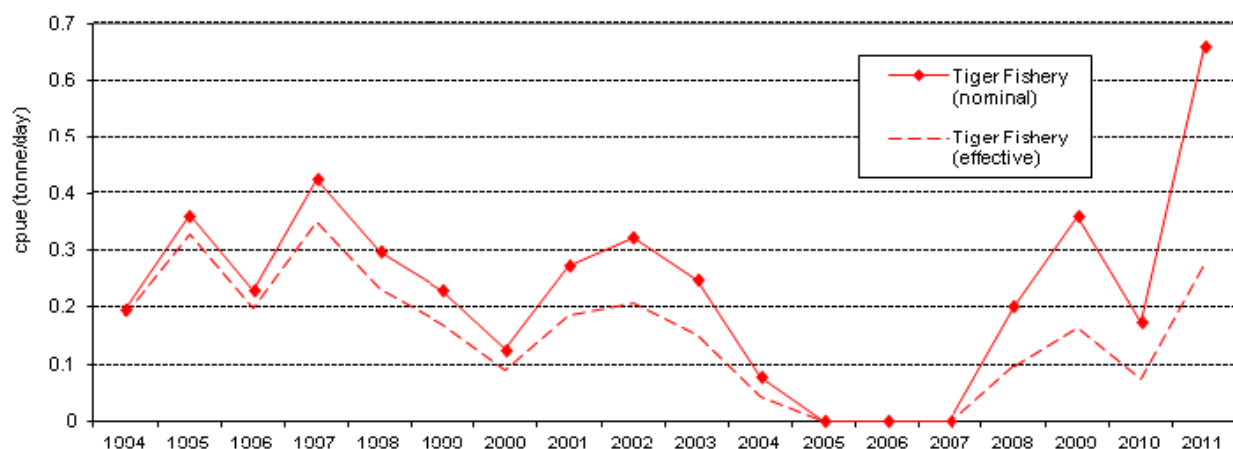


Figure 52c: Catch rate for the tiger prawn fishery in the Melville area between 1994 and 2011.

Fog Bay

Banana prawn catches in the Fog Bay area decreased from 318 t in 2010 to 286 t in 2011. Catches of tiger and endeavour prawns in 2011 were the less than 1 t, as in 2010 (Figure 53). Banana prawns comprised 100% of the catch taken during 2011 in this area (Figure 54).

Effort in the banana fishery decreased from 180 days in 2010 to 169 days in 2011 (Figure 55a). CPUE of banana prawns decreased from 1.765 t per day in 2010 to 1.692 t per day in 2011 (Figure 55b). No effort was expended in the tiger prawn fishery in 2011 (Figure 55a). Both nominal and effective CPUE were zero in 2011 (Figure 55c).

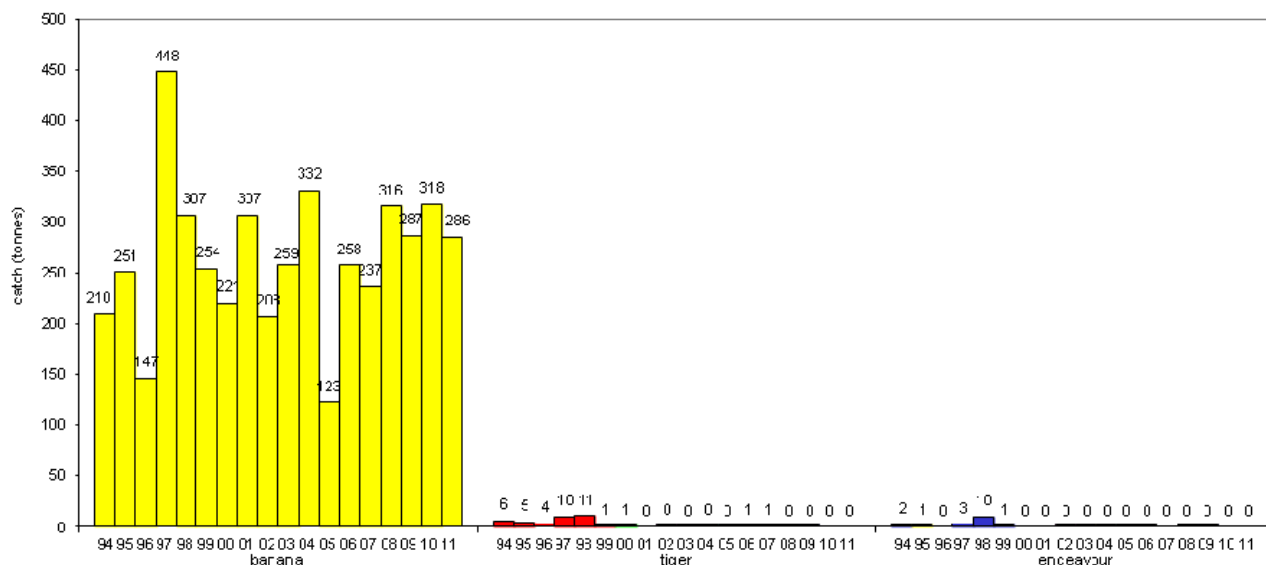


Figure 53: Catch by species in the Fog Bay area between 1994 and 2011.

a)



b)

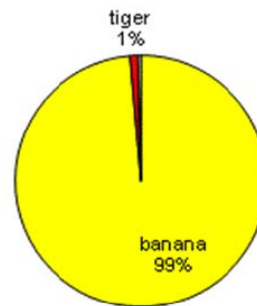


Figure 54: Percentage catch of prawn species in the Fog Bay area during 2011 (a) and percentage catch of prawn species in the Fog Bay area from 1994 to 2011 (b).

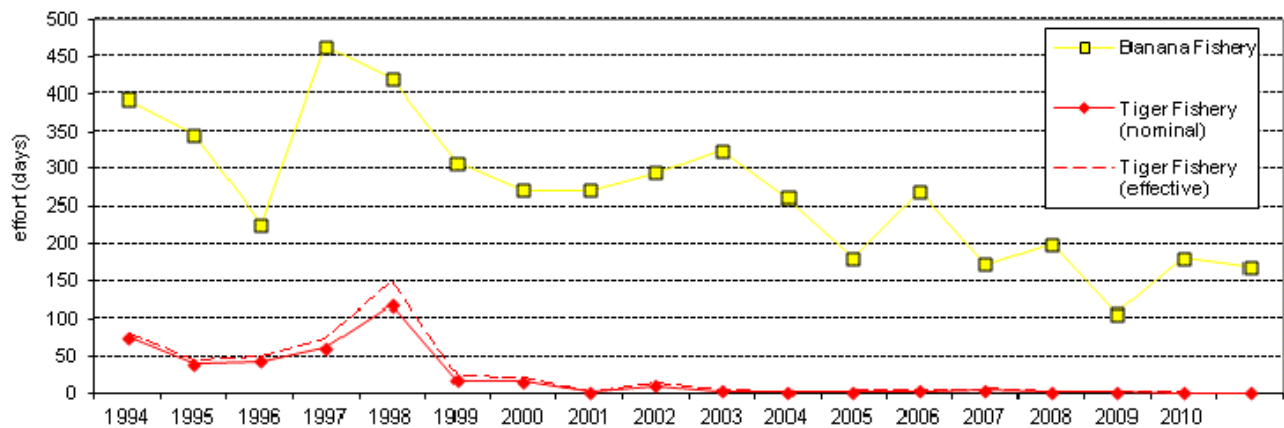


Figure 55a: Effort for the banana and tiger prawn fisheries in the Fog Bay area between 1994 and 2011.

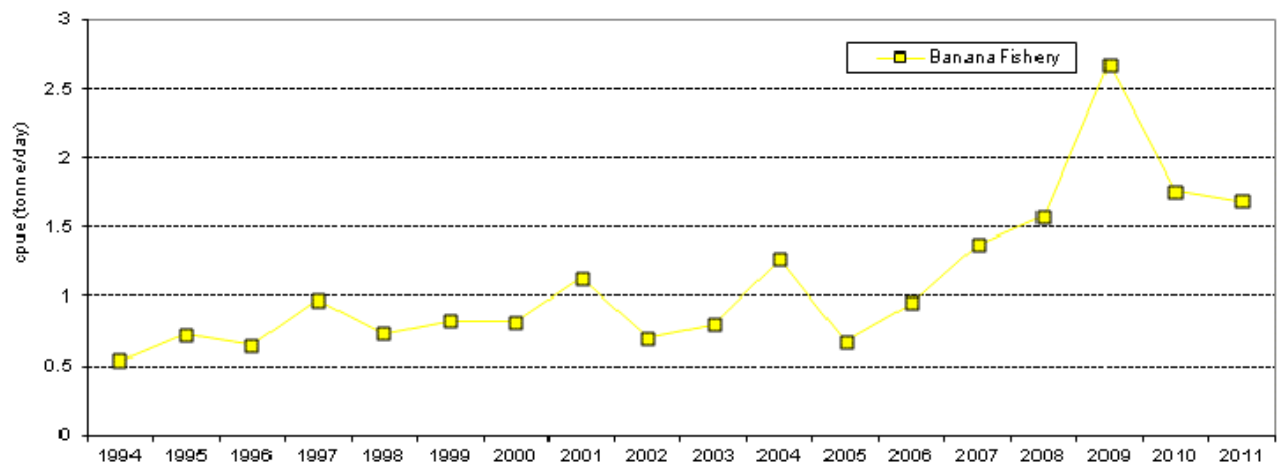


Figure 55b: Catch rate for the banana prawn fishery in the Fog Bay area between 1994 and 2011.

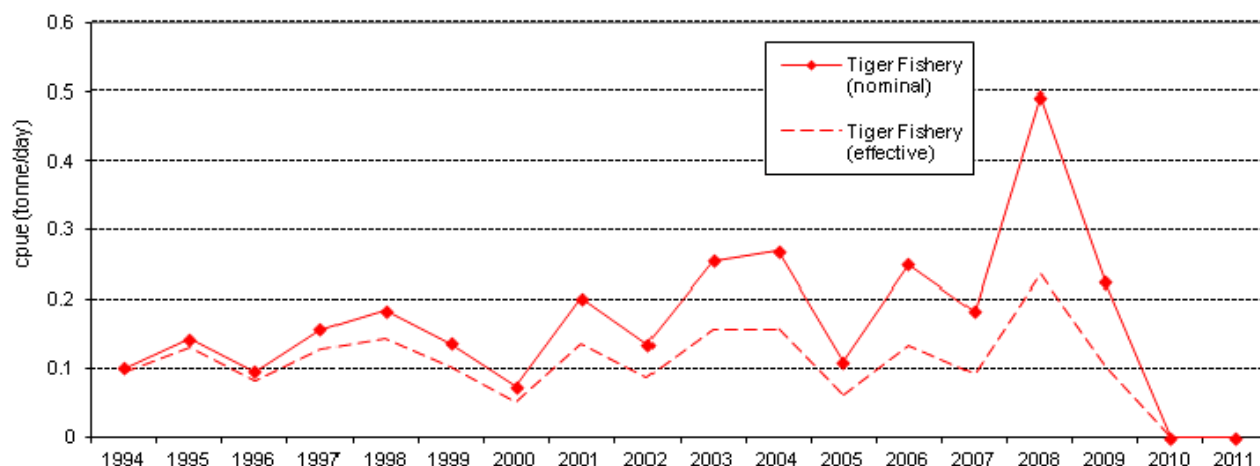


Figure 55c: Catch rate for the tiger prawn fishery in the Fog Bay area between 1994 and 2011.

Bonaparte

Banana prawn catches in the Bonaparte area increased from 254 t in 2010 to 463 t in 2011. Tiger prawn catches increased from 2 t in 2010 to 6 t in 2011, and endeavour prawn catches increased from 9 t in 2010 to 85 t in 2011 (Figure 56). Banana prawns made up 84% of the catch for 2011 in this area, followed by endeavour prawns (15%) and tiger prawns (1%) (Figure 57).

Effort in the banana fishery increased from 218 days in 2010 to 345 days in 2011 (Figure 58a). CPUE of banana prawns increased from 1.199 t per day in 2010 to 1.369 t in 2011 (Figure 58b). Effort in the tiger prawn fishery increased from 10 days in 2010 to 100 days in 2011 (Figure 58a). Nominal and effective CPUE of tiger prawns increased from 0.352 and 0.153 t per day respectively in 2010 to 0.815 and 0.338 t per day in 2011. (Figure 58c).

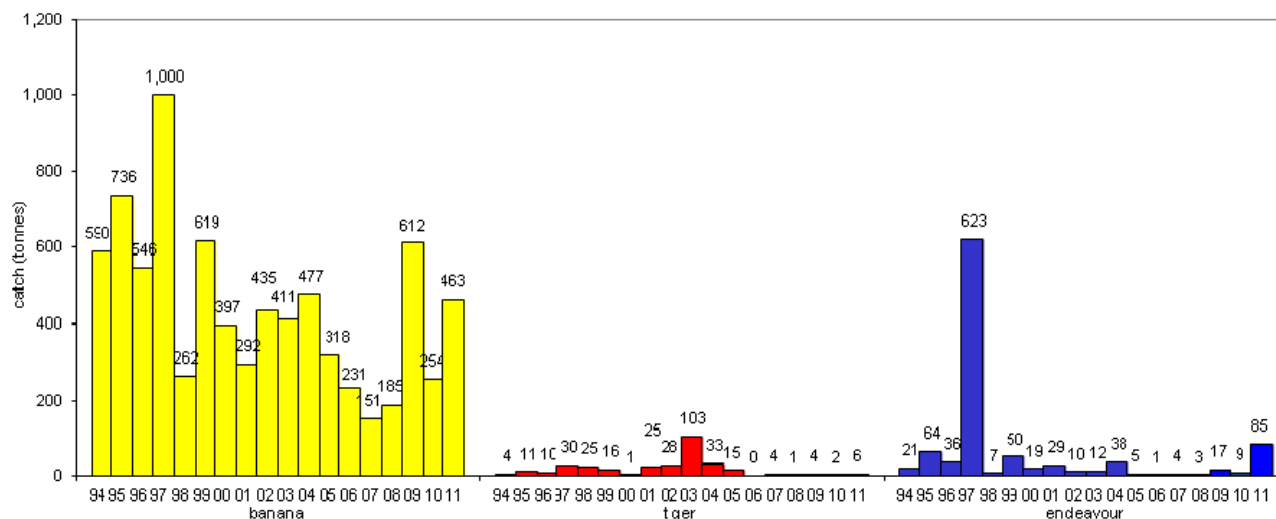
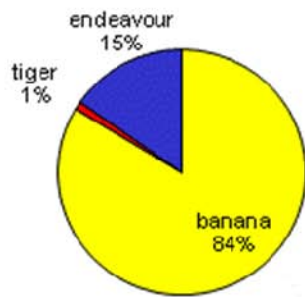


Figure 56: Catch by species in the Bonaparte area between 1994 and 2011.

a)



b)

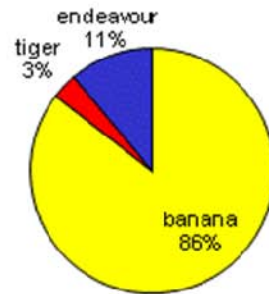


Figure 57: (a) Percentage catch of prawn species in the Bonaparte area during 2011, and (b) percentage catch of prawn species in the Bonaparte area from 1994 to 2011.

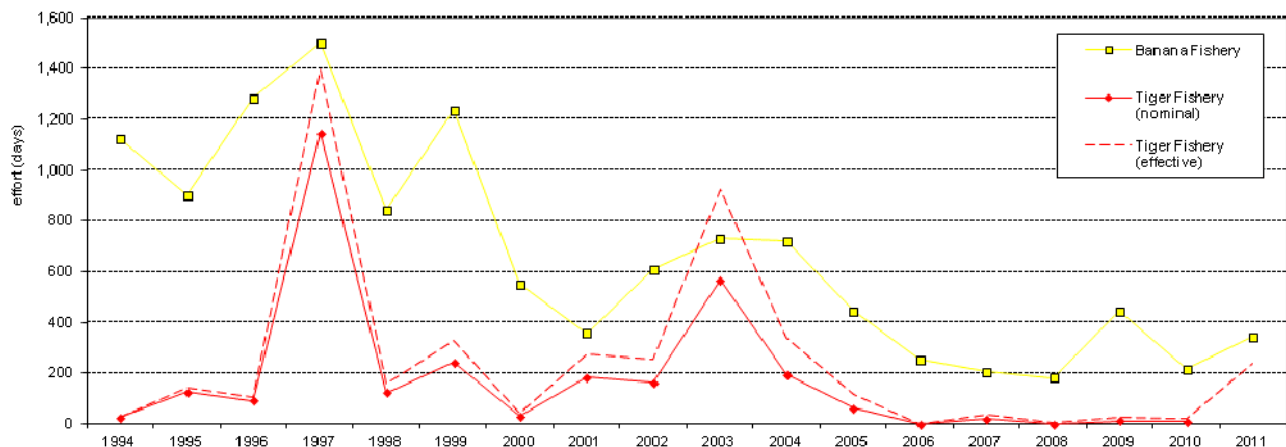


Figure 58a: Effort for the banana and tiger prawn fisheries in the Bonaparte area between 1994 and 2011.

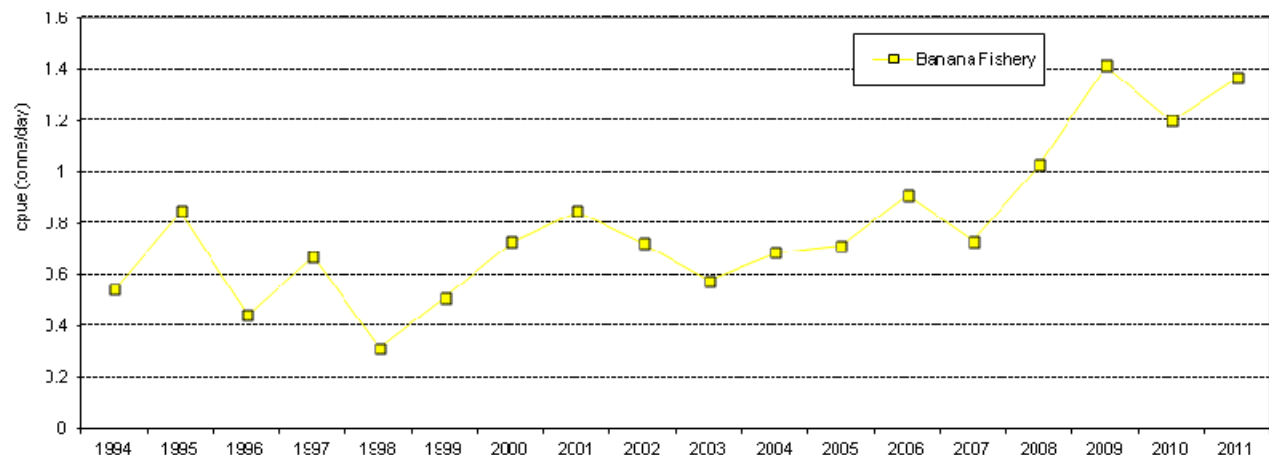


Figure 58b: Catch rate for the banana prawn fishery in the Bonaparte area between 1994 and 2011.

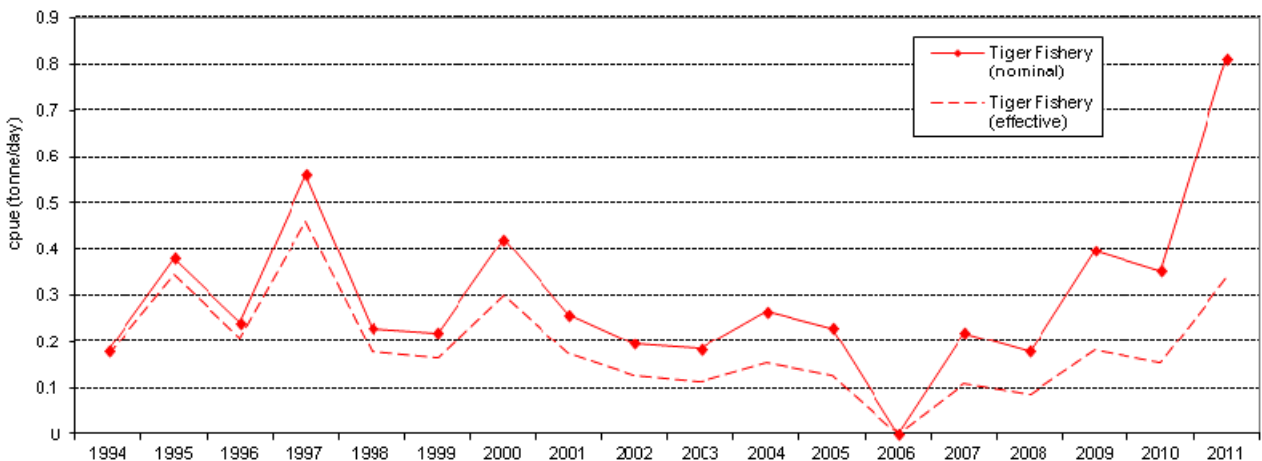


Figure 58c: Catch rate for the tiger prawn fishery in the Bonaparte area between 1994 and 2011.

Bycatch in the Northern Prawn Fishery

Turtle bycatch

A total of 10 turtles interactions were reported in the NPF during 2011 (Table 5). Green turtles were the most numerous (6 interactions), followed by Flatback turtles (3 interactions). A single interaction with an unidentified turtle species was also reported (Figure 59). All turtles were released alive. Turtle bycatch in the NPF was highest in the Groote and Mornington regions, with four interactions having been reported from each location (Figure 60).

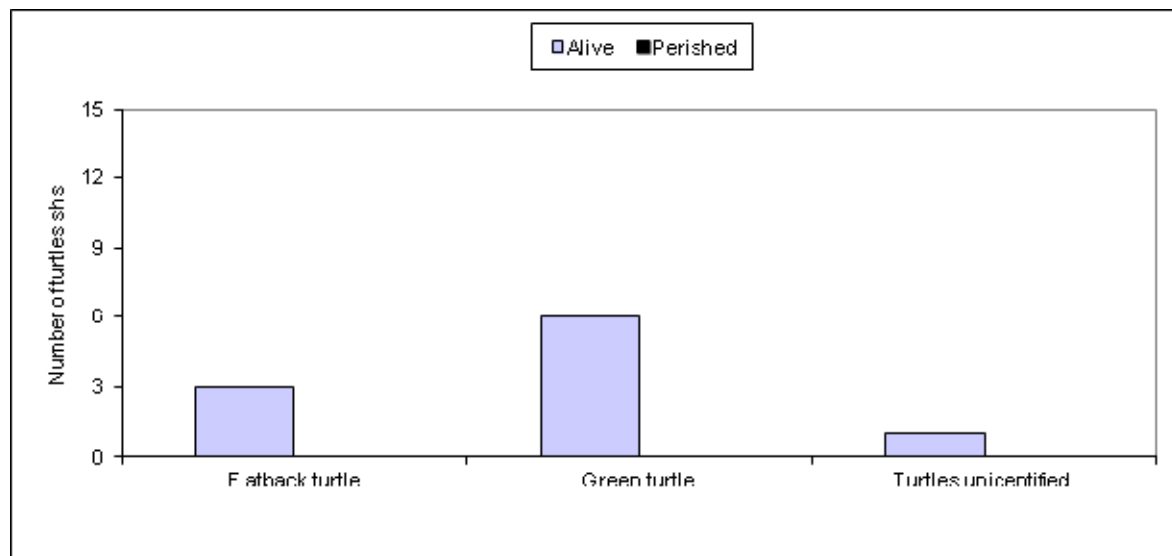


Figure 59: Turtle bycatch in the NPF by area in 2011.

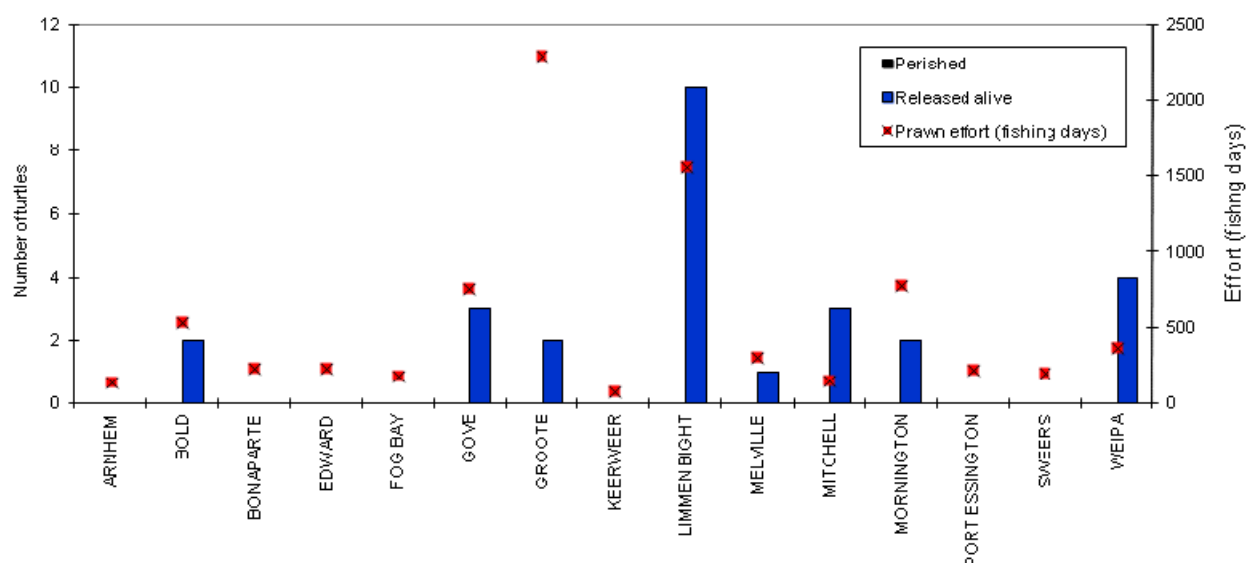


Figure 60: Turtle bycatch in the NPF by species in 2011.

Table 5: Turtle bycatch by species for each area, 2007-2011.

| Statistical Area | Turtle Species | Released Alive | | | | | Perished | | | | | Condition Unknown | | | | |
|------------------|----------------------|----------------|----|----|----|----|----------|----|----|----|----|-------------------|----|----|----|----|
| | | 07 | 08 | 09 | 10 | 11 | 07 | 08 | 09 | 10 | 11 | 07 | 08 | 09 | 10 | 11 |
| ARNHEM | Flatback | | | | | | | | | | | | | | | |
| | Green | | | 1 | | | | | | | | | | | | |
| | Hawksbill | | | 1 | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | 1 | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| | Unidentified species | 1 | 2 | | | | | | | | | | | | | |
| BOLD | Flatback | 4 | | 1 | 1 | | | | | | | | | | | |
| | Green | | | | 1 | | | | | | | | | | | |
| | Hawksbill | 1 | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| BONAPARTE | Flatback | | | | | | | | | | | | | | | |
| | Green | | | | | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| EDWARD | Flatback | | | | | | | | | | | | | | | |
| | Green | 1 | | | | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| FOG BAY | Flatback | | | | | | | | | | | | | | | |
| | Green | 2 | | | | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |

Table 5 (cont): Turtle bycatch by species for each area, 2007-2011.

| Statistical Area | Turtle Species | Released Alive | | | | | Perished | | | | | Condition Unknown | | | | |
|-----------------------|----------------------|----------------|----|----|----|----|----------|----|----|----|----|-------------------|----|----|----|----|
| | | 07 | 08 | 09 | 10 | 11 | 07 | 08 | 09 | 10 | 11 | 07 | 08 | 09 | 10 | 11 |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| | Unidentified species | | | | | | | | | | | | | | | |
| GOVE | Flatback | 2 | | | 2 | | | | | | | | | | | |
| | Green | | | | | 1 | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | 2 | | | | | | | | | | | | | | |
| | Unidentified species | 1 | 2 | | 1 | | | | | | | | | | | |
| GROOTE | Flatback | 8 | | | 1 | 3 | | | | | | | | | | |
| | Green | 1 | | 1 | 1 | 1 | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | 3 | | | | | | | | | | | | | | |
| | Unidentified species | 3 | 1 | 7 | | | | | | | | | | | | |
| LIMMEN BIGHT | Flatback | | 1 | 1 | 2 | | | | | | | | | | | |
| | Green | | | 1 | 1 | | | | | | | | | | | |
| | Hawksbill | | 1 | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | 1 | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | 5 | | | | | | | | | | | |
| | Unidentified species | 2 | | 9 | 2 | 1 | | 3 | | | | | | | | |
| MELVILLE | Flatback | | | | | | | | | | | | | | | |
| | Green | | | | | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| | Unidentified species | 7 | | | 1 | | | 1 | | | | | | | | |
| MITCHELL | Flatback | | | | | | | | | | | | | | | |
| | Green | | | | 3 | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| | Unidentified species | | 1 | 1 | | | | | | | | | | | | |
| MORNINGTON | Flatback | | | | | | | | | | | | | | | |
| | Green | | | 4 | 1 | 4 | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | 1 | | | | | | | | | | | | | |
| | Pacific Ridley | 1 | 2 | | 1 | 1 | | | | | | | | | | |
| | Unidentified species | 1 | | 7 | | | | | | | | | | | | |
| PORT ESSINGTON | Flatback | | | | | | | | | | | | | | | |
| | Green | | | | | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | 1 | | | | | | | | | | | | | |
| | Unidentified species | 2 | 1 | 1 | | | | | | | | | | | | |

Table 5 (cont): Turtle bycatch by species for each area, 2007-2011.

| Statistical Area | Turtle Species | Released Alive | | | | | Perished | | | | | Condition Unknown | | | | |
|------------------------|----------------------|----------------|----|----|----|----|----------|----|----|----|----|-------------------|----|----|----|----|
| | | 07 | 08 | 09 | 10 | 11 | 07 | 08 | 09 | 10 | 11 | 07 | 08 | 09 | 10 | 11 |
| SWEERS | Flatback | | 2 | | | | | | | | | | | | | |
| | Green | | | | | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| | Unidentified species | | | | | | | | | | | | | | | |
| WEIPA | Flatback | | 1 | | | | | | | | | | | | | |
| | Green | 3 | | | 4 | | | | | | | | | | | |
| | Hawksbill | | | | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | | | | | | | | | | | | | | | |
| | Pacific Ridley | | | | | | | | | | | | | | | |
| | Unidentified species | 14 | 3 | 2 | | | | | | | | | | | | |
| TOTAL ALL AREAS | Flatback | 10 | 8 | 2 | 6 | | | | | | | | | | | |
| | Green | 7 | | 7 | 11 | | | | | | | | | | | |
| | Hawksbill | | 2 | 1 | | | | | | | | | | | | |
| | Leatherback | | | | | | | | | | | | | | | |
| | Loggerhead | 1 | 2 | 0 | | | | | | | | | | | | |
| | Pacific Ridley | 6 | 3 | | 6 | | | | | | | | | | | |
| | Unidentified species | 31 | 11 | 32 | 4 | | 1 | 3 | | | | | | | | |
| GRAND TOTAL | ALL SPECIES | 55 | 26 | 43 | 27 | 10 | 0 | 1 | 3 | 0 | | 0 | 0 | 0 | 0 | 0 |

Sea snake bycatch

A total of 5,813 seasnake interactions were recorded during 2011. The majority of sea snakes (4,777 individuals, representing 82% of the total) were released alive. 581 (10%) perished, 81 (1.5%) were released injured, and 374 (6.5%) of seasnakes caught were released with condition unknown (Table 6). Seasnake bycatch was significantly higher in the Groote area compared to all other regions (1,462 individuals) and was lowest in Keerweer (29), followed by Mitchell (48). The number of seasnakes interactions recorded in 2011 was down 1,657 compared to 2010 (7470 interactions were reported in 2010, compared to 5813 in 2011). The percentage of seasnakes released alive in 2011 was also comparable to 2010 (82% and 84% respectively).

Table 6: Seasnake bycatch by area in the NPF for 2011.

| Statistical area | Released alive | Perished | Released injured | Condition unknown | Total |
|------------------|----------------|----------|------------------|-------------------|-------|
| ARNHEM | 84 | 10 | | 1 | 95 |
| BOLD | 553 | 58 | 7 | 15 | 633 |
| BONAPARTE | 218 | 30 | 2 | | 250 |
| EDWARD | 106 | 10 | 3 | | 119 |
| FOG BAY | 46 | 3 | | | 49 |
| GOVE | 346 | 53 | 4 | 70 | 473 |
| GROOTE | 1,198 | 94 | 21 | 149 | 1,462 |
| KEERWEER | 26 | 1 | 1 | 1 | 29 |
| LIMMEN BIGHT | 621 | 89 | 10 | 1 | 721 |
| MELVILLE | 86 | 8 | 2 | | 96 |
| MITCHELL | 38 | 10 | | | 48 |
| MORNINGTON | 258 | 23 | 2 | 29 | 312 |
| PORT | | | | | |
| ESSINGTON | 270 | 99 | 6 | | 375 |
| SWEERS | 314 | 26 | 3 | 5 | 348 |
| WEIPA | 613 | 67 | 20 | 103 | 803 |
| Total | 4,777 | 581 | 81 | 374 | 5,813 |

Scampi Catch

Due to data confidentiality requirements scampi catch cannot be disclosed.

Scientific Observer and Crew Member Observer coverage

Tables 7 and 8 enable comparison of recorded interactions with TEP species occurring within the Crew Member Observer (CMO), Scientific Observer and logbook datasets.

In 2011, the number of fishing days from logbook returns (7,583 days) was a slight reduction compared to 2010 (8044 days). The number of days observed by CMOs increased significantly from 394 in 2010 to 798 in 2011. The number of days observed by Scientific Observers was consistent in 2011 compared to 2010, at 183 days.

Crew Member Observers reported the highest numbers of interactions with turtles, Syngnathids and sawfish (Table 7). Highest number of interactions with seasnakes was reported within logbook data (7583) (Table 7).

Interaction frequency reported for all TEP species groups was highest within CMO data compared to logbook data and Scientific Observer data (Table 8).

Increases in the volume of information collected by Crew Member Observers, and reported frequency of interactions within the CMO data set in 2011 is likely to be a result of revitalized training initiatives delivered with funding through the Department of Agriculture Fisheries and Forestry's Next Gen Farmers grants scheme, and incentives offered by NPF Industry Pty Ltd for provision of required quantities of verified data.

Table 7: Comparison of TEP species interactions reported by Scientific Observers, CMOs and in logbooks in the NPF during the 2011 tiger prawn season.

| | Vessel Returns | Fishing Days | Total Sea Snakes | Total Turtles | Total Syngnathids | Total Sawfish |
|------------------------------|----------------|--------------|------------------|---------------|-------------------|---------------|
| Logbook Returns | 54 | 7583 | 5813 | 10 | 6 | 60 |
| Crew Member Observers | 9 | 798 | 1206 | 57 | 83 | 118 |
| Scientific Observers* | 8 | 183 | 112 | 6 | 6 | 19 |

*Days fishing practices were observed.

**Scientific observer results includes data collected during gear trials.

Table 8: Comparison of TEP species interactions reported by Scientific Observers, CMOs and in logbooks per boat day during in the NPF during the 2011 tiger prawn season.

| | Sea Snakes per Fishing Day | Turtles per Fishing Day | Syngnathids per Fishing Day | Sawfish per Fishing Day |
|------------------------------|----------------------------|-------------------------|-----------------------------|-------------------------|
| Logbook Returns | 0.767 | 0.001 | 0.001 | 0.008 |
| Crew Member Observers | 1.511 | 0.071 | 0.104 | 0.148 |
| Scientific Observers* | 0.612 | 0.033 | 0.033 | 0.104 |

*Scientific observer results include data collected during gear trials.

State/Territory specific data

Total prawn catch in Queensland increased in 2010/11, from 2,969 t in 2009/10 to 5,391 in 2010/11. Total prawn catch also increased in Western Australia, from less than 1 t in 2009/10 to 117 t in 2010/11. A decrease in the total prawn catch was observed in the Northern Territory, from 1875 t in 2009/10 to 1448 t in 2010/11.

Banana prawn catch increased in Queensland in 2010/11 from 2,952 in 2009/10 to 5,388 in 2010/11. Banana prawn catch decreased in the Northern Territory from 1,868 t in 2009/10 to 1,447 t in 2010/11. Banana prawn catch in Western Australia increased from less than one tone in 2009/10 to 117 t in 2010/11 (Table 9).

Tiger prawn catches decreased in Queensland, from 17 t in 2009/10 to 3 t in 2010/11. Tiger prawn catches also decreased in the Northern Territory from 4 t in 2009/10 to less than 1 t in 2010/11. Tiger prawn catches in Western Australia remained at less than 1 t in 2010/11.

Catches of both endeavour and king prawns in Queensland and Western Australia were less than 1 t in 2010/11. 1 t of endeavour prawns were caught in the Northern Territory in 2010/11 (down from 4 t in 2009/10). King prawn catches in the Northern Territory were less than 1 t for the same period (Table 9).

Table 9: Prawn catch by State/Territory from 1990/91 to 2010/11 financial years.

| <i>State</i> | <i>Financial Year</i> | <i>Banana (t)</i> | <i>Tiger (t)</i> | <i>Endeavour (t)</i> | <i>King (t)</i> | <i>Total Catch (t)</i> |
|---------------------------|-----------------------|-------------------|------------------|----------------------|-----------------|------------------------|
| Queensland | 1990/91 | 4,646 | 1,151 | 269 | 51 | 6,117 |
| | 1991/92 | 1,392 | 1,710 | 548 | 30 | 3,680 |
| | 1992/93 | 1,857 | 968 | 357 | 18 | 3,200 |
| | 1993/94 | 904 | 1,032 | 416 | 8 | 2,360 |
| | 1994/95 | 2,540 | 1,883 | 346 | 24 | 4,793 |
| | 1995/96 | 2,562 | 1,570 | 761 | 23 | 4,916 |
| | 1996/97 | 2,050 | 1,259 | 817 | 15 | 4,141 |
| | 1997/98 | 1,986 | 1,318 | 878 | 11 | 4,193 |
| | 1998/99 | 1,548 | 634 | 335 | 5 | 2,522 |
| | 1999/00 | 637 | 629 | 348 | 1 | 1,615 |
| | 2000/01 | 3,651 | 553 | 352 | 4 | 4,560 |
| | 2001/02 | 3,286 | 372 | 211 | 1 | 3,870 |
| | 2002/03 | 1,307 | 97 | 54 | 1 | 1,459 |
| | 2003/04 | 1,639 | 152 | 14 | 0 | 1,805 |
| | 2004/05 | 1,700 | 70 | 7 | 0 | 1,777 |
| | 2005/06 | 1,384 | 217 | 46 | 9 | 1,656 |
| | 2006/07 | 1,839 | 192 | 46 | 8 | 2,085 |
| | 2007/08 | 3,578 | 126 | 32 | 8 | 3,744 |
| | 2008/09 | 3,858 | 8 | 0 | 0 | 3,866 |
| | 2009/10 | 2,952 | 17 | 0 | 0 | 2,969 |
| | 2010/11 | 5,388 | 3 | 0 | 0 | 5,391 |
| Northern Territory | 1990/91 | 1,430 | 2,156 | 380 | 46 | 4,012 |
| | 1991/92 | 669 | 2,332 | 434 | 27 | 3,462 |
| | 1992/93 | 1,639 | 1,907 | 437 | 18 | 4,001 |
| | 1993/94 | 697 | 1,768 | 403 | 18 | 2,886 |
| | 1994/95 | 1,536 | 1,855 | 423 | 19 | 3,833 |
| | 1995/96 | 1,072 | 1,615 | 434 | 6 | 3,127 |
| | 1996/97 | 1,472 | 1,184 | 387 | 9 | 3,052 |
| | 1997/98 | 1,241 | 1,466 | 490 | 9 | 3,206 |
| | 1998/99 | 1,549 | 2,141 | 778 | 6 | 4,474 |
| | 1999/00 | 1,247 | 1,564 | 586 | 11 | 3,408 |
| | 2000/01 | 2,323 | 1,546 | 489 | 3 | 4,361 |
| | 2001/02 | 1,789 | 1,561 | 892 | 1 | 4,243 |
| | 2002/03 | 1,509 | 1,797 | 333 | 2 | 3,641 |
| | 2003/04 | 1,437 | 1,985 | 390 | 1 | 3,813 |
| | 2004/05 | 838 | 1,683 | 368 | 2 | 2,891 |
| | 2005/06 | 1,495 | 1,587 | 316 | 19 | 3,417 |
| | 2006/07 | 783 | 1,582 | 304 | 19 | 2,688 |
| | 2007/08 | 1,550 | 1,100 | 164 | 12 | 2,826 |
| | 2008/09 | 930 | 1 | 0 | 0 | 931 |
| | 2009/10 | 1,868 | 4 | 3 | 0 | 1,875 |
| | 2010/11 | 1,447 | 0 | 1 | 0 | 1,448 |
| Western Australia | 1990/91 | 579 | 86 | 42 | 0 | 707 |
| | 1991/92 | 231 | 8 | 11 | 0 | 250 |
| | 1992/93 | 498 | 5 | 6 | 0 | 509 |
| | 1993/94 | 828 | 4 | 13 | 0 | 845 |

Table 9 (cont): Prawn catch by State/Territory from 1990/91 to 2010/11 financial years.

| State | Financial Year | Banana (t) | Tiger (t) | Endeavour (t) | King (t) | Total Catch (t) |
|-------|----------------|------------|-----------|---------------|----------|-----------------|
| | 1994/95 | 414 | 2 | 16 | 0 | 432 |
| | 1995/96 | 713 | 18 | 65 | 0 | 796 |
| | 1996/97 | 1,079 | 5 | 38 | 0 | 1,122 |
| | 1997/98 | 756 | 66 | 686 | 1 | 1,509 |
| | 1998/99 | 519 | 23 | 17 | 0 | 559 |
| | 1999/00 | 329 | 2 | 38 | 0 | 369 |
| | 2000/01 | 281 | 16 | 23 | 0 | 320 |
| | 2001/02 | 345 | 23 | 28 | 0 | 396 |
| | 2002/03 | 509 | 75 | 8 | 0 | 592 |
| | 2003/04 | 461 | 49 | 13 | 0 | 523 |
| | 2004/05 | 293 | 29 | 36 | 0 | 358 |
| | 2005/06 | 231 | 0 | 1 | 0 | 232 |
| | 2006/07 | 108 | 190 | 0 | 0 | 298 |
| | 2007/08 | 151 | 5 | 4 | 0 | 160 |
| | 2008/09 | 72 | 0 | 0 | 0 | 72 |
| | 2009/10 | 0 | 0 | 0 | 0 | 0 |
| | 2010/11 | 117 | 0 | 0 | 0 | 117 |

Byproduct of the NPF by State/Territory

Due to confidentiality reasons, catches of Australian Scampi are not included in the table below, either under individual species or total catches. Total byproduct retained in the NPF and State/Territory in 2011 was 53,214 kg, with highest retained byproduct levels from the Northern Territory, and lowest from Western Australia. Moreton bay bugs were the largest component of byproduct catches, with 25,573 kg retained (Table 10).

Table 10: Retained byproduct of the NPF by State/Territory in 2011 (kilograms).

| Species | NT | QLD | WA | Total |
|--|-----------|-----------|--------|-----------|
| Bugs - Shovel nosed and slipper lobsters | 5,671.50 | 4,292.00 | | 9,963.50 |
| Champagne lobster - Spear lobster | 1,464.00 | | | 1,464.00 |
| Commercial scallop | 5,787.40 | 177.00 | | 5,964.40 |
| Coral prawns | 93.00 | | | 93.00 |
| Cuttlefishes | 1,698.00 | 1,422.00 | | 3,120.00 |
| Golden snapper - Fingermark seaperch | | 24.00 | | 24.00 |
| Herring | 23.00 | 38.00 | | 61.00 |
| Jewfish | 7.00 | 22.00 | | 29.00 |
| Mackerel | | 25.00 | | 25.00 |
| Mangrove Jack | 8.00 | | | 8.00 |
| Mixed fish | | 95.00 | | 95.00 |
| Moreton Bay bugs | 16,818.00 | 8,587.00 | 168.00 | 25,573.00 |
| Octopuses | 25.00 | 15.00 | | 40.00 |
| Pilchard | | 10.00 | | 10.00 |
| Pomfret | 200.00 | 123.00 | | 323.00 |
| Scallops | 1,027.00 | | | 1,027.00 |
| Squids | 1,862.00 | 2,999.00 | | 4,861.00 |
| Whittings | 534.00 | | | 534.00 |
| Total | 35,217.90 | 17,829.00 | 168.00 | 53,214.90 |

