

## **NORTHERN PRAWN FISHERY DATA SUMMARY**

**2009**



## NORTHERN PRAWN FISHERY DATA SUMMARY 2009

NPF INDUSTRY PTY LTD on behalf of Australian Fisheries Management Authority  
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Northern Prawn Fishery Data Summary 2009  
June 2010

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# NORTHERN PRAWN FISHERY DATA SUMMARY 2009

## Preface

### Scope of the Report

This data summary provides a broad outline of the catch and effort for the Northern Prawn Fishery (NPF) and is an important mechanism for providing feedback to stakeholders on the logbook data received by AFMA. In addition, the extraction and analysis of the data by the Logbook Program helps to identify data quality issues and provides valuable information on how fishery data needs and collection methods can be improved.

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 second year NPF Industry Pty Ltd is responsible for developing the data summary. The following data summary reviews the 2009 season prawn catch and effort for the NPF.

### Acknowledgements

Production of this report was made possible through the efforts of the skippers and vessel owners and Crew Member Observers of the NPF. Skippers supplied daily logbook information and vessel owners completed seasonal landing returns. The log sheets and landing returns were processed by D&S Datafix.

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Also note that this Data Summary is available on AFMA's website: [www.afma.gov.au](http://www.afma.gov.au)



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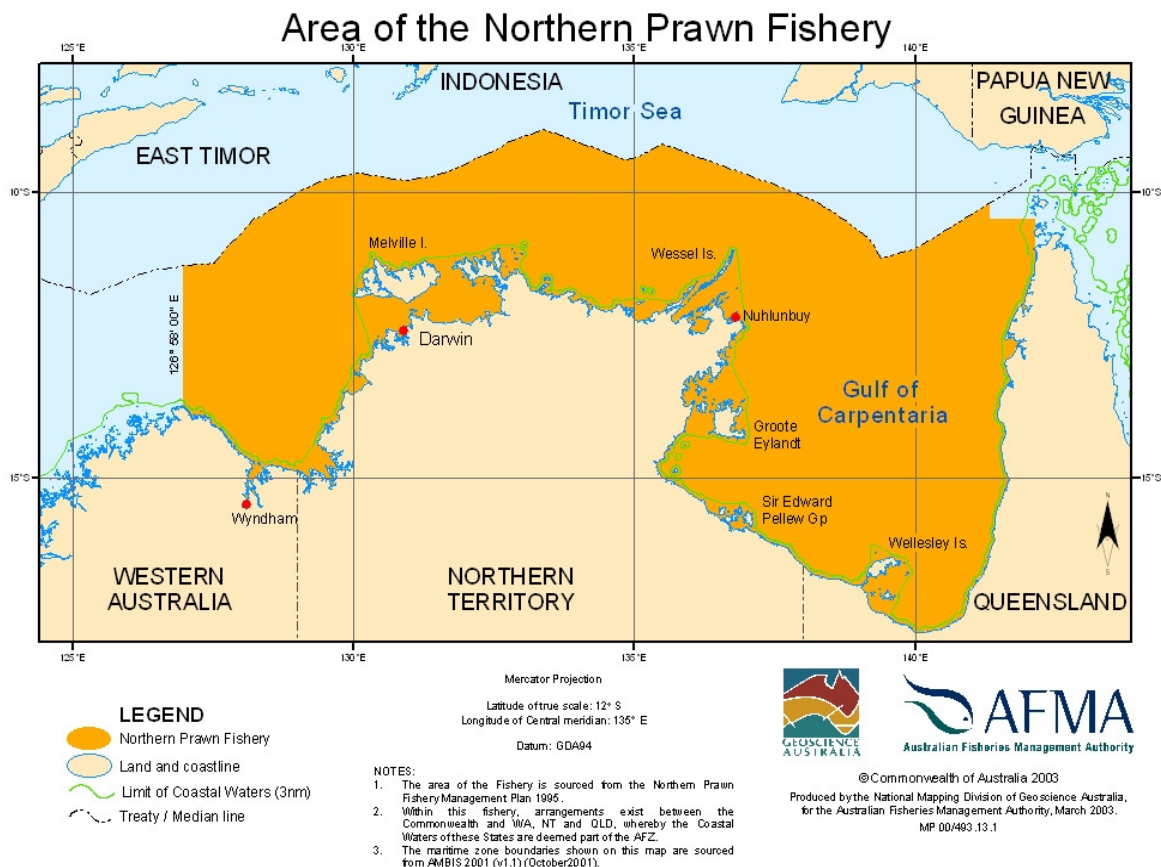
## Introduction

The Northern Prawn Fishery Data Summary 2009 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 Settlements 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 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 (Figure1).



**Figure 1:** Northern Prawn Fishery Management Area.



## **Fishing Methods**

Prawn trawling is an active fishing method that involves towing a conical-shaped net spread open by two 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 NPF Management Plan and relevant Determinations. In addition to the main nets a small net, or try-net, is used to test the 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 use electronic aids such as colour echo sounders and Global Positioning Systems (GPS) and plotters. Satellite phone 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 Fishery is managed through a combination of input controls (limited entry, seasonal closures, permanent area closures, gear restrictions and operational controls) which are implemented under the Northern Prawn Fishery Management Plan 1995 (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 and the amount of gear used in the Fishery. In 2001 the management plan was amended to allow the total gear pool to be set by 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 prawns were introduced. This was achieved by shortening the seasons and a further 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 B Class SFRs and approximately 30% of the effective effort from the Northern Prawn Fishery (NPF). The fishery is now composed of 52 vessels which is the level estimated by ABARE to maximise the economic yield (MEY) of the NPF. The industry has formed a company 'NPF Industry Pty Ltd' 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 from 5.625 to 7.481 and Concessions Holders also having the ability to use quad gear (with a 10% penalty applied).

In 2009 there were no additional increases in fishing effort through an increase in gear SFRs. However the tiger prawn season was increased by four weeks based on the outputs of the 2008 tiger prawn stock assessment. As such, the 2009 tiger prawn season opened on the 25<sup>th</sup> July and closed on the 19<sup>th</sup> December. This was the first time since the introduction of the mid-year closure (1987) that the tiger prawn season commenced before the 1<sup>st</sup> August.

## Species

The Fishery 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.

The fishery is split into two seasons. In 2009, the seasons were from 7 April to 16 June (banana prawn season) and from 25 July to 5 December (tiger prawn season) respectively.

## 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). Approximately 44 operators in the banana prawn season and 43 operators in the tiger prawn season used e-logs in 2009. 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 at AFMA on the Northern Prawn, Kimberley Prawn and Torres Strait Prawn database.

The data used in this summary was extracted during April 2010 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 50 out of 52 vessels 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 0.5% when compared to seasonal landing returns, with the greatest discrepancy being 17.7% for the banana prawn season. The tiger prawn catches recorded in the logbooks from 49 vessels out of 52 were within 10% of the catch recorded in the seasonal landing returns for the tiger prawn season. On average logbook catches of tiger prawns were overestimated by 0.9% when compared to seasonal landing returns, with the greatest discrepancy being 14.6% 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.

## Banana and Tiger Prawn Fishery Components

The 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.

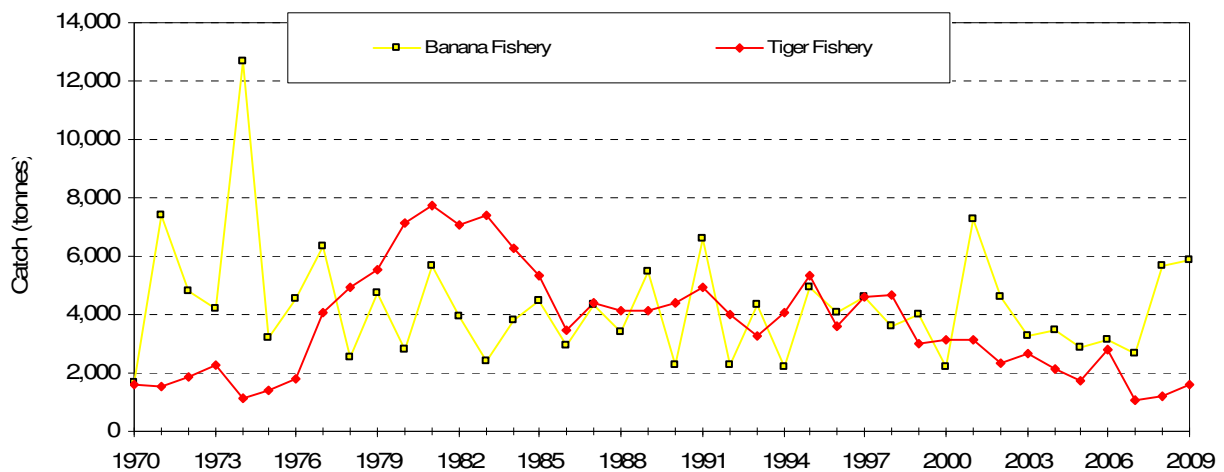
## Catch and Effort Data for the Northern Prawn Fishery

### Coverage

The 2009 NPF seasons were from 7 April to 16 June and 25 July to 5 December. There were 70 days available to fish during the first season and 133 during the second season (a total of 203), which was 14 days more than 2008. The increased number of fishing days in 2009 was due to an increase in effort that was made available in second season as a result of the 2008 tiger prawn stock assessment.

### Catch

The total NPF prawn catch for 2009 was 7,483 t compared with 7,058 t in 2008 (Table 1). The catch of banana prawns in 2009 (5,881 t) remained similar to the previous year (5,816 t). The catch of tiger prawns increased by 22% from 1,021 t in 2008 to 1,250 t in 2009. Catches of endeavour prawns increased by 62% from 213 t in 2008 to 346 t in 2009 (Figure 2). In 2009 catches of king prawns remained at 7 t.



**Figure 2:** Catch in the banana and tiger prawn fisheries between 1970 and 2009.

**Table 1:** Annual reconciled landings, effort and vessel number in the NPF from 1970 to 2009.

| 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                      |
| <i>1970-'79average</i> | <i>5,214</i> | <i>1,885</i> | <i>701</i>    | <i>22</i>  | <i>7,822</i>    | <i>188</i>            | <i>5,715</i>                 | <i>9,094</i>                |
| 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                      |
| <i>1980-'89average</i> | <i>3,904</i> | <i>4,237</i> | <i>1,406</i>  | <i>103</i> | <i>9,653</i>    | <i>248</i>            | <i>7,758</i>                 | <i>29,141</i>               |
| 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                      |
| <i>1990-'99average</i> | <i>3,863</i> | <i>3,078</i> | <i>1,056</i>  | <i>55</i>  | <i>8,052</i>    | <i>144</i>            | <i>5,477</i>                 | <i>18,220</i>               |
| 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 <sup>1</sup>       | 3,347                        | 4,556                       |
| <b>2009</b>            | <b>5,881</b> | <b>1,250</b> | <b>346</b>    | <b>7</b>   | <b>7,483</b>    | <b>55<sup>1</sup></b> | <b>3,095</b>                 | <b>4,889</b>                |
| <i>2000-'09average</i> | <i>4,139</i> | <i>1,711</i> | <i>476</i>    | <i>11</i>  | <i>6,335</i>    | <i>87</i>             | <i>3,798</i>                 | <i>7,741</i>                |

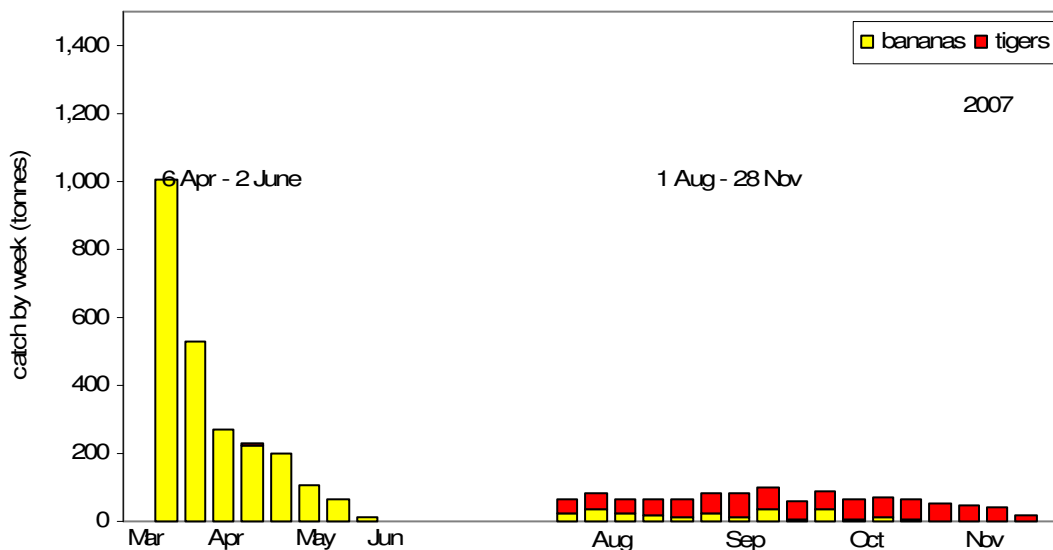
\* note: Catch data is extracted from seasonal landing returns.

<sup>1</sup> There are only 52 B SFRs and multiple vessels used the same B SFRs at different times.

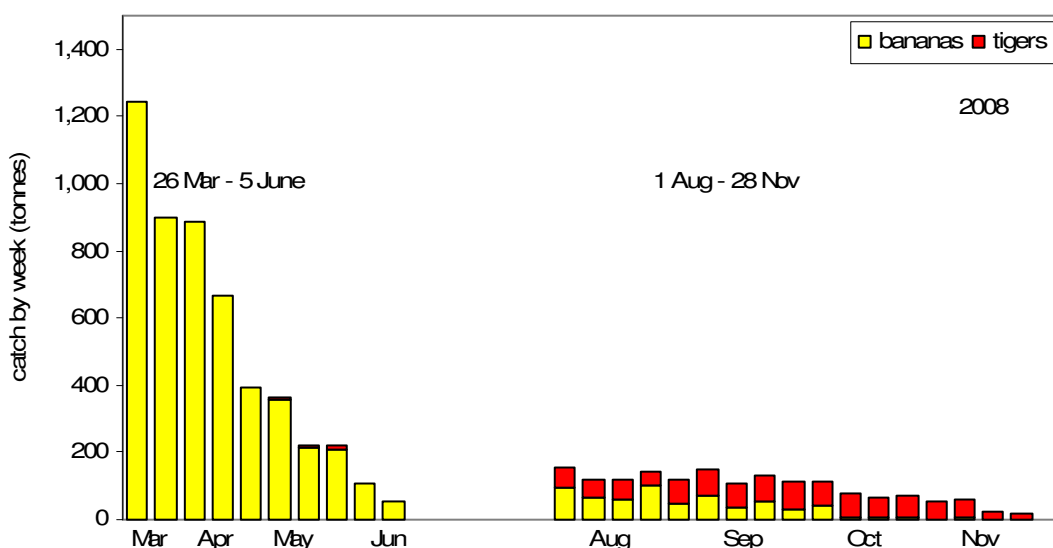
## Catch by week

Figures 3 (a), (b) and (c) show the catch of banana and tiger prawns by week during 2007, 2008 and 2009. Similar to the 2007 and 2008 banana prawn seasons, highest catches of banana prawns were recorded in the first week in 2009. In 2007, banana prawn catches were almost halved by the second week, banana prawn catches in 2008 remained quite high (>600 t) until the fifth week and in 2009 steadily declined over the first six weeks of the eight week season.

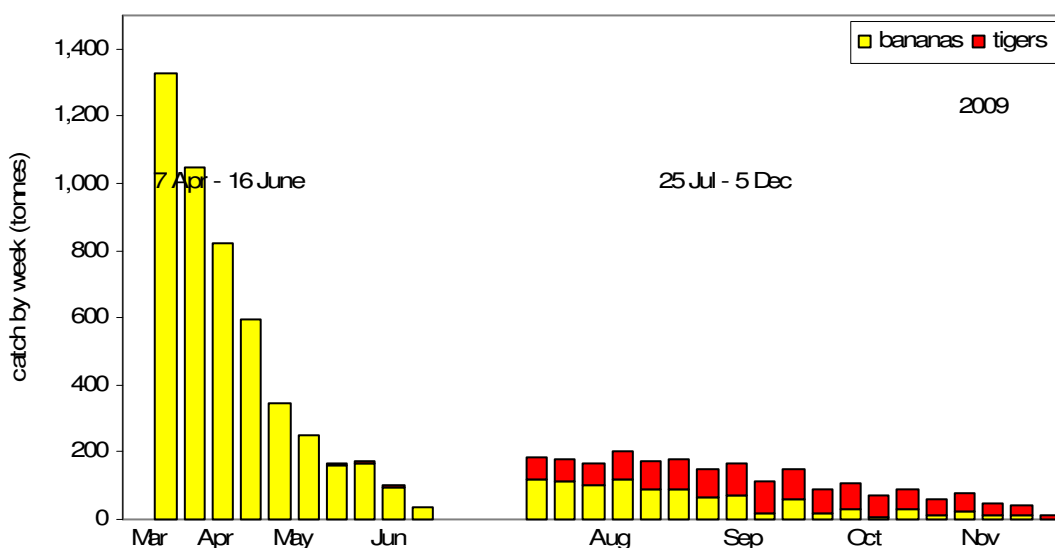
In 2009, catches of banana prawns during the first five weeks of the tiger prawn season were greater than catches of tiger prawns. Catches of tiger prawns during the tiger prawn season were at their highest from week's four to ten ranging from 79 t to 94 t.



**Figure 3a:** Weekly catches of banana and tiger prawns (t) in the NPF in 2007.



**Figure 3b:** Weekly catches of banana and tiger prawns (t) in the NPF in 2008.

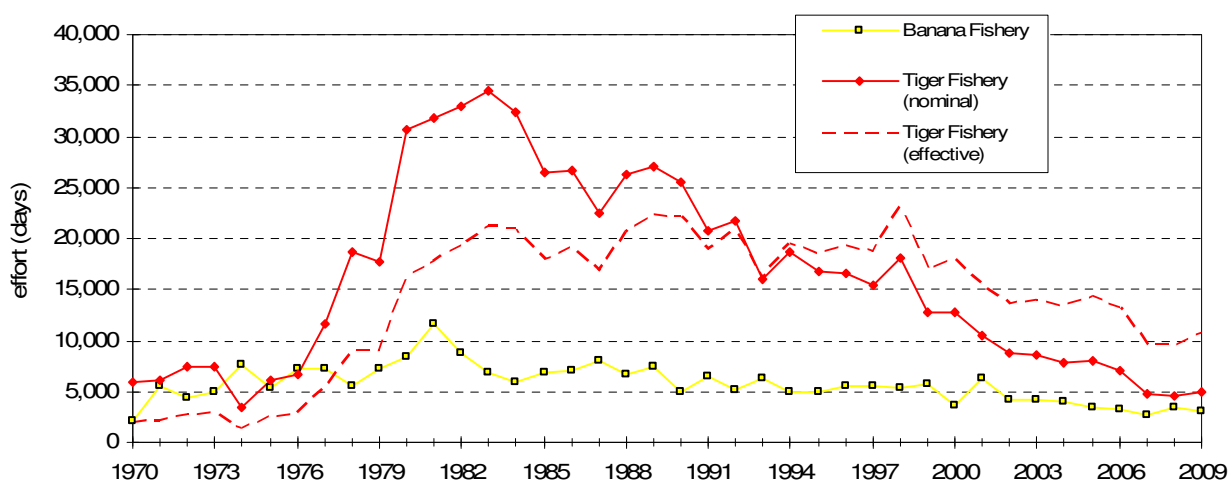


**Figure 3c:** Weekly catches of banana and tiger prawns (t) in the NPF in 2009.

## 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 based on the assumption that there has been an 'effort creep' (an increase in effectiveness of the gear utilised). 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 decreased by 252 days (8%) in 2009 compared to 2008. In the tiger prawn fishery, nominal effort increased by 333 days (7%) in 2009 compared to 2008.

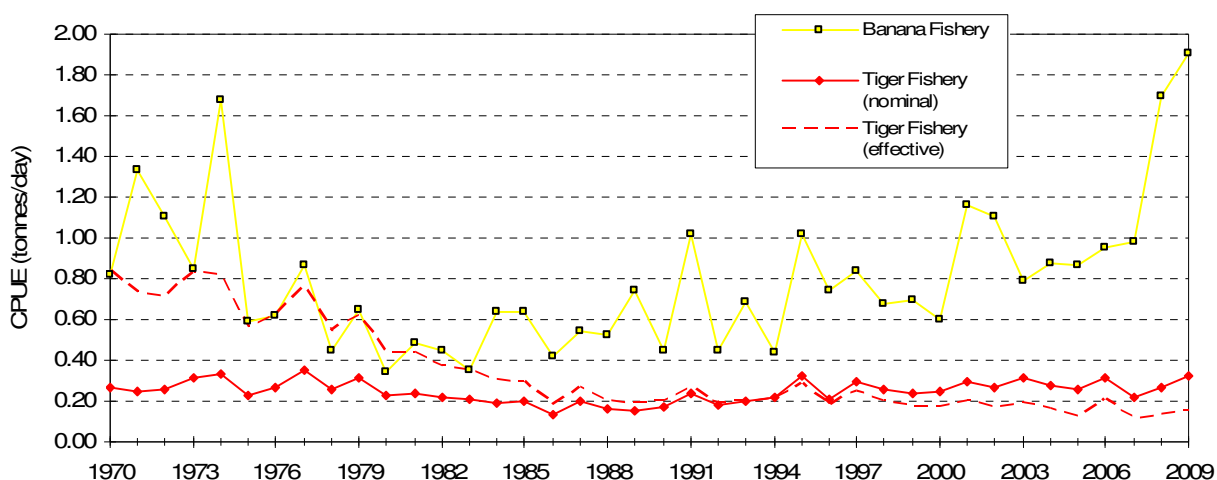


**Figure 4:** Effort in the banana and tiger prawn fisheries in the NPF between 1970 and 2009.

## Catch Rate

It is worth noting that there have been a number of changes to headrope length implemented in the fishery 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 understood that trends in CPUE don’t necessarily reflect trends in stock abundance.

The banana prawn fishery catch rate increased from a daily rate of 1.699 t per day in 2008 to 1.904 in 2009. The nominal catch rate for the tiger prawn fishery increased from 0.220 t per day in 2008 to 0.325 t per day in 2009, while the effective catch rate increased from 0.130 t per day in 2008 to 0.149 t per day in 2009 (Figure 5).



**Figure 5:** Catch rate in the banana and tiger prawn fisheries between 1970 and 2009.

## Catch, effort and catch rate by month

The highest total prawn catches during the 2009 banana prawn season were obtained during April whilst the highest total prawn catches during the 2009 tiger prawn season were obtained during August (Table 2).

Table 3 shows effort by month in the banana and tiger prawn seasons for 2009. Effort for 2009 in the banana prawn season was highest in April and lowest in June. Tiger prawn season effort was consistent through August, September and October before declining in November with boats beginning to return to port (Table 3).

Monthly catch rates (CPUE) for banana prawns were highest in April during the banana prawn season (Table 4). While monthly catch rates for both nominal and effective effort for tiger prawns were highest in July during the tiger prawn season.

**Table 2:** Monthly catch by species in 2009.

| Catch (t)    | Apr   | May   | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Grand Total |
|--------------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-------------|
| Banana       | 3,490 | 1,215 | 158 | 118 | 477 | 239 | 103 | 60  | 0   | 5,861       |
| Tiger        | 0     | 8     | 1   | 67  | 331 | 386 | 302 | 165 | 1   | 1,270       |
| Endeavour    | 0     | 0     | 0   | 22  | 112 | 50  | 79  | 83  | 4   | 353         |
| King         |       | 0     |     | 0   | 0   | 0   | 0   | 0   |     | 0           |
| <b>Total</b> | 3,491 | 1,223 | 159 | 206 | 921 | 675 | 484 | 308 | 5   | 7,485       |

**Table 3:** Monthly effort in the banana and tiger prawn seasons in 2009.

| Effort (days)             | Apr   | May | Jun | Jul | Aug   | Sep   | Oct   | Nov   | Dec | Grand Total |
|---------------------------|-------|-----|-----|-----|-------|-------|-------|-------|-----|-------------|
| Banana Fishery            | 1,122 | 865 | 125 | 119 | 344   | 219   | 122   | 94    | 17  | 3,095       |
| Tiger Fishery (nominal)   | 2     | 25  | 3   | 209 | 1,091 | 1,175 | 1,311 | 1,008 | 14  | 4,889       |
| Tiger Fishery (effective) | 4     | 55  | 7   | 456 | 2,382 | 2,565 | 2,862 | 2,200 | 31  | 10,672      |
| <b>Total</b>              | 1,124 | 890 | 128 | 328 | 1,435 | 1,394 | 1,433 | 1,102 | 31  | 7,984       |

**Table 4:** Monthly catch rate for all species in the banana and tiger prawn seasons in 2009.

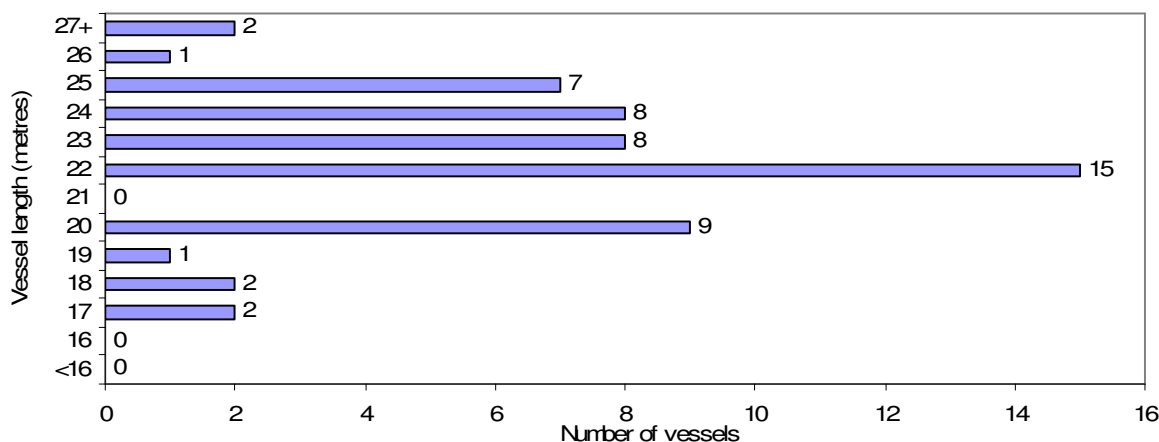
| CPUE (t/day)              | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Banana Fishery            | 3.111 | 1.405 | 1.266 | 1.003 | 1.404 | 1.155 | 0.892 | 0.685 | 0.000 |
| Tiger Fishery (nominal)   | 0     | 0     | 0.126 | 0.413 | 0.401 | 0.360 | 0.286 | 0.241 | 0.348 |
| Tiger Fishery (effective) | 0     | 0     | 0.058 | 0.189 | 0.184 | 0.165 | 0.131 | 0.111 | 0.159 |



## Vessel and gear information

### Vessel length

A total of 55 different vessels fished in the NPF at some stage during 2009 (note – as there are only 52 B SFRs, some vessels may have fished on the same B SFR at different times). The most common NPF vessel length in 2009 was between 22.0-22.9 metres (Figure 6).

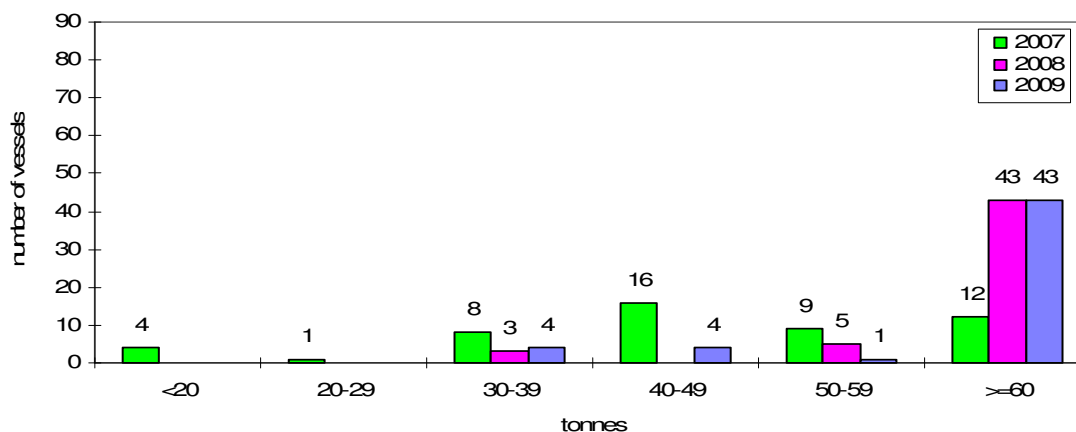


**Figure 6:** Frequency of vessel lengths in the NPF fleet in 2009.

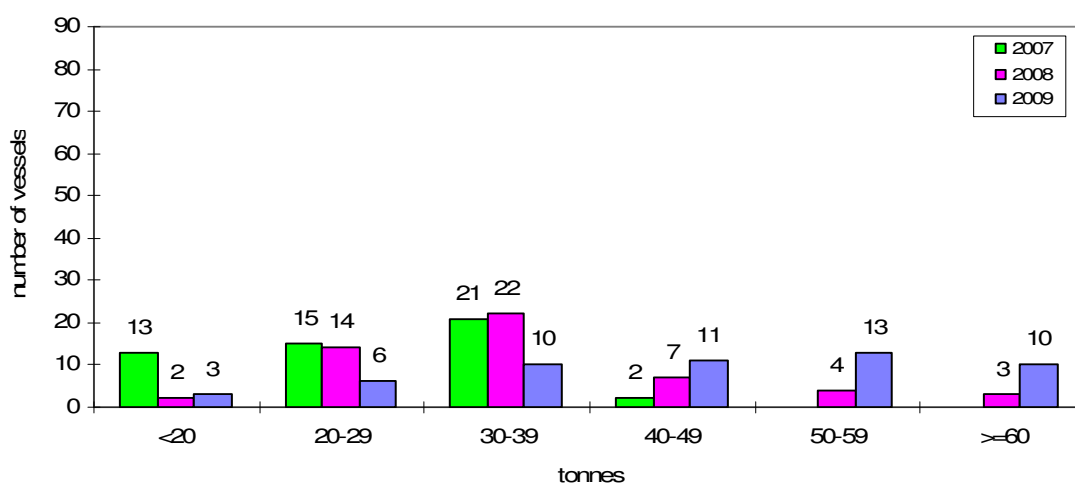
### Distribution of catch by vessel

A total of 52 vessels fished during the 2009 banana prawn season. The highest distribution of catch in the banana prawn season of 2009 was in the range  $\geq 60$  t category with 43 vessels or 83% (Figure 7a). Four vessels (8%) caught between 30-39 t, another four vessels (8%) caught between 40-49 t while the remaining vessel (1%) caught between 50-59 t (Figure 7a).

A total of 53 vessels fished during the 2009 tiger prawn season (two vessels used the same SFR at different times). In the tiger prawn season, 3 vessels (6%) caught less than 20 t, 6 vessels (11%) caught between 20-29 t and 10 vessels (19%) caught between 30-39 t, 11 vessels (21%) caught between 40-49 tonnes, 13 vessels (24%) caught between 50-59 t and 10 vessels (19%) caught greater than 60 t (Figure 7b).



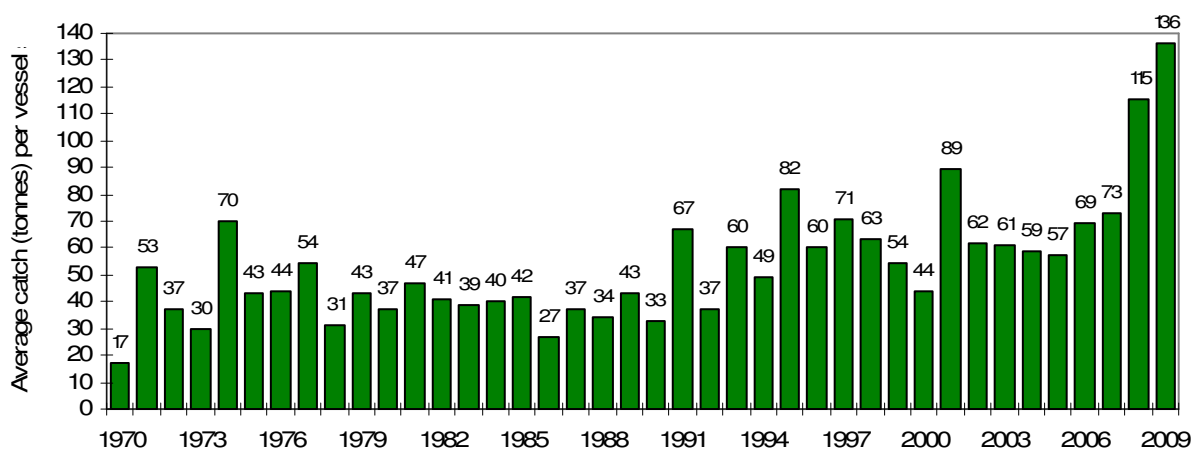
**Figure 7a:** Distribution of total catch in the banana prawn season, 2007-2009.



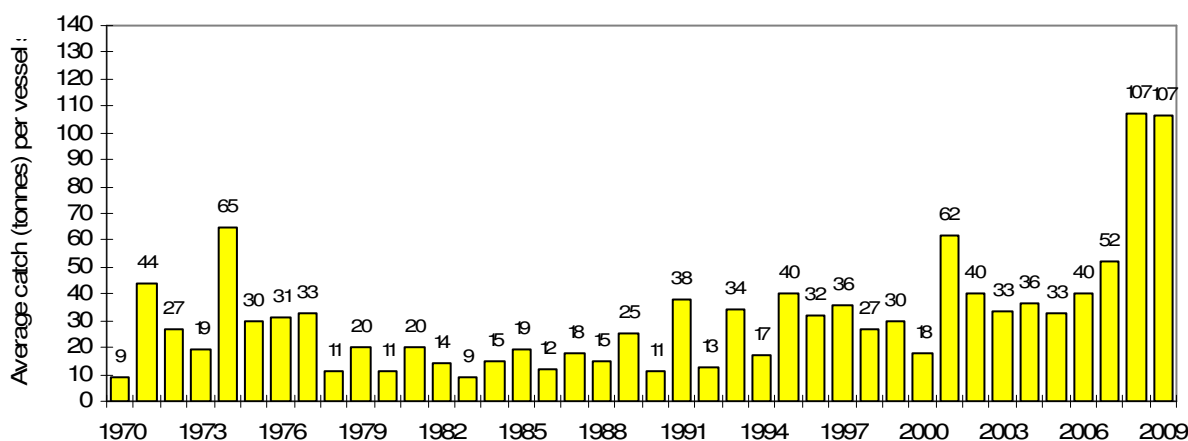
**Figure 7b:** Distribution of total catch in the tiger prawn season, 2007-2009.

### Average catch per vessel

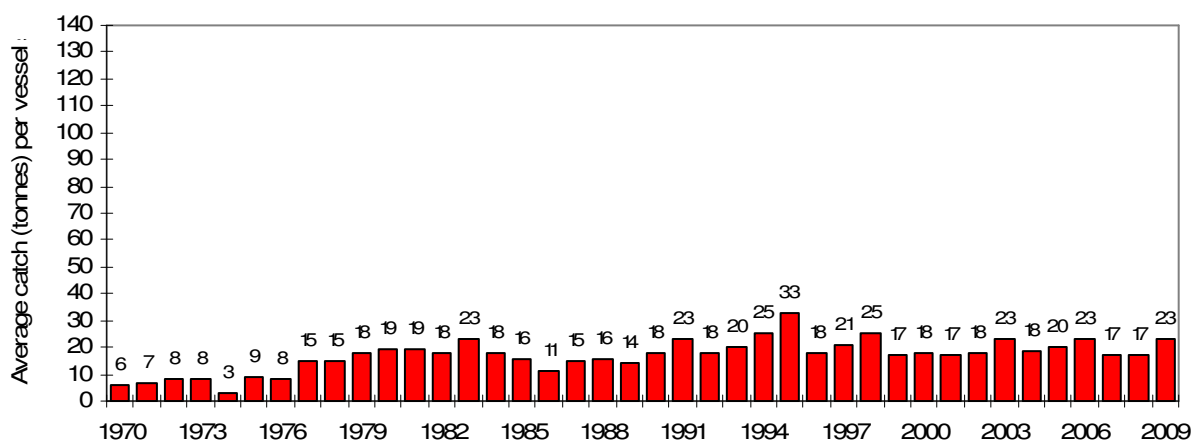
The average catch per vessel for all prawns increased (18%) from 115 t in 2008 to 136 t per vessel in 2009 (Figure 8a). The average catch per vessel for banana prawns in 2009 remained the same as 2008, 107 t (106%) per vessel (Figure 8b). In 2009 average catches of tiger prawns per vessel increased from 17 t in 2008 to 23 t per vessel (Figure 8c).



**Figure 8a:** Average total catch of all prawns per vessel in the NPF from 1970 to 2009.



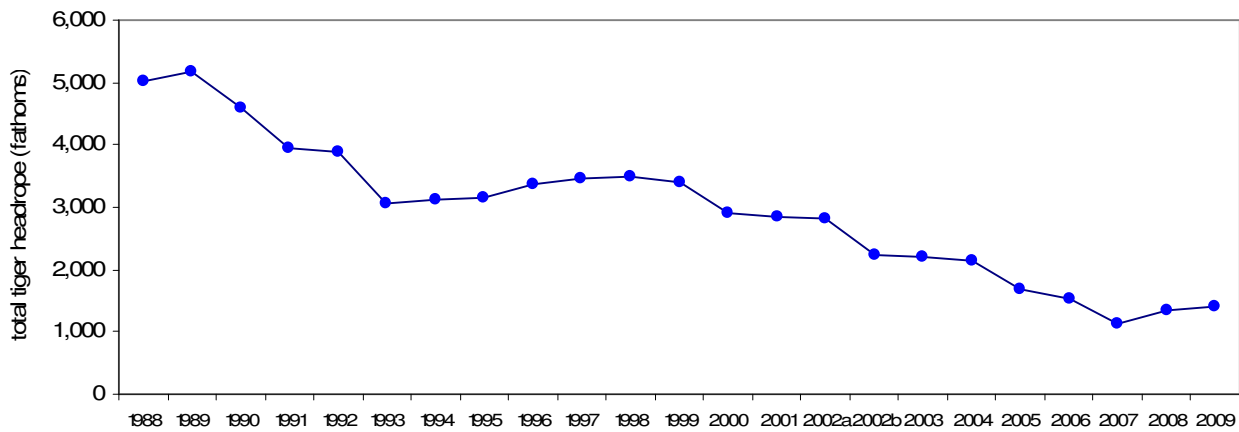
**Figure 8b:** Average total catch of banana prawns per vessel in the NPF from 1970 to 2009.



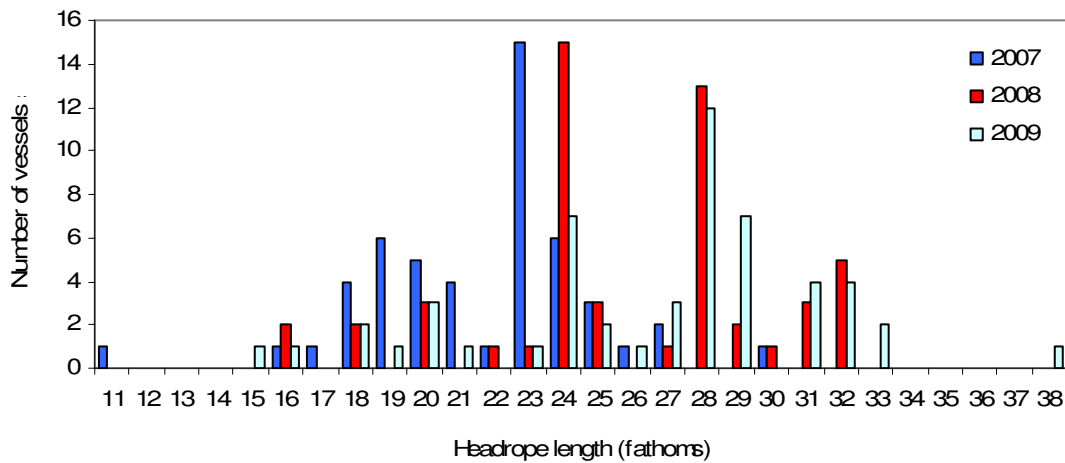
**Figure 8c:** Average total catch of tiger prawns per vessel in the NPF from 1970 to 2009.

## Fishing Gear

Total tiger prawn headrope in 2009 increased to 1,808 fathoms (2.6km) compared to 1,337 (2.4km) in 2008 (Figure 9). The mean headrope length in 2009 was 26.57 fathoms (48.6m) compared with 25.22 fathoms (46.1m) in 2008 (Figure 10).



**Figure 9:** Total tiger prawn season headrope length in the NPF from 1988 to 2009.

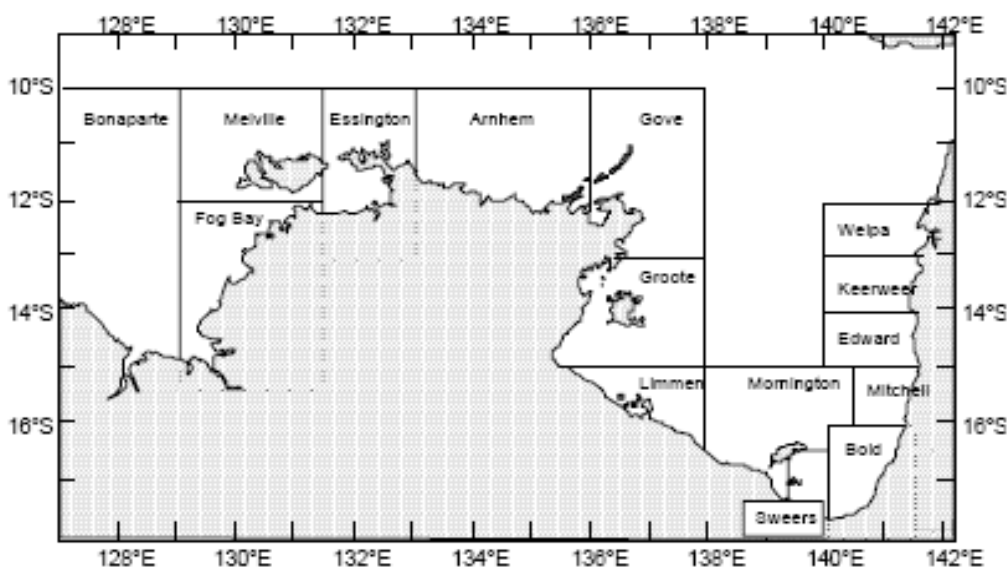


**Figure 10:** Frequency of headrope length for the tiger prawn season in the NPF from 2007 to 2009.

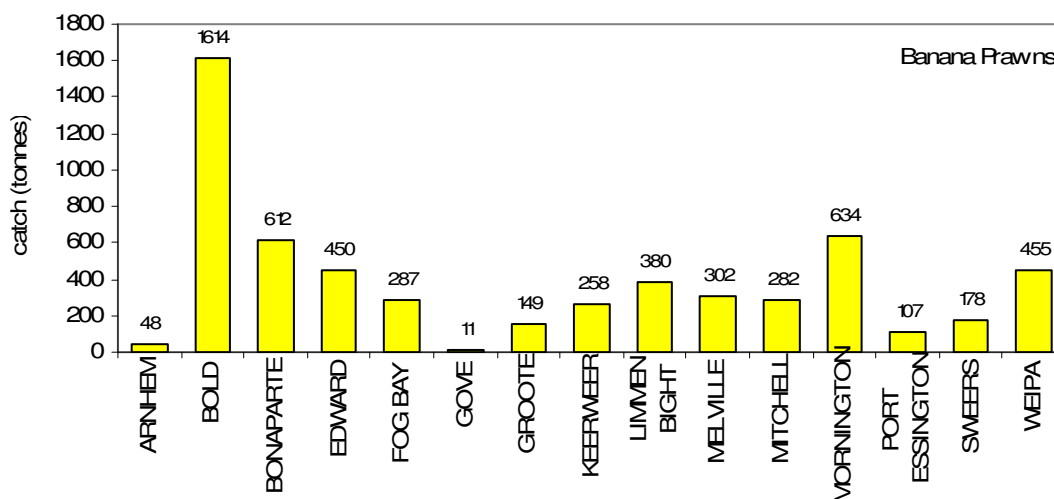
## Catch and effort by statistical area in the NPF

### All areas

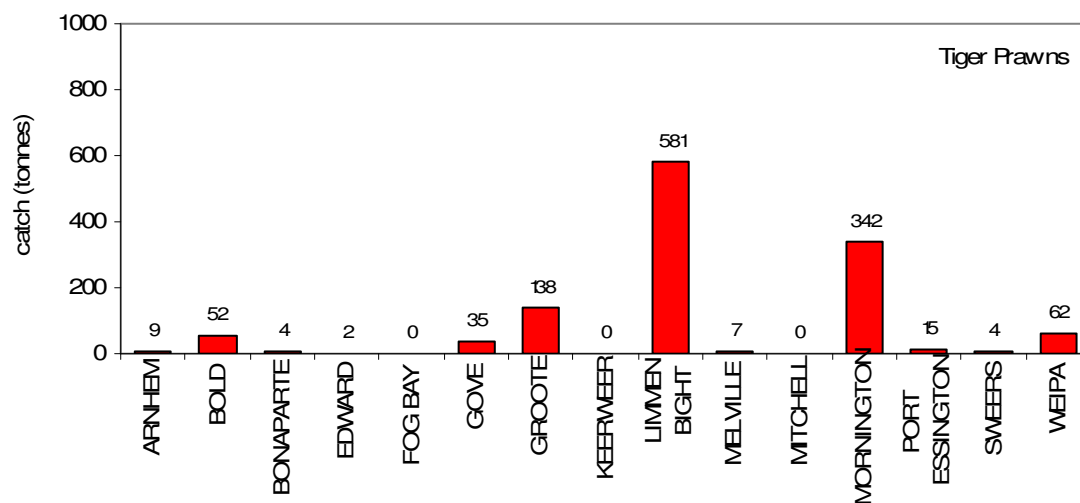
Catch and effort has been partitioned into the 15 statistical areas illustrated below (Figure 11) and is detailed on the following pages. The highest banana prawn catches were recorded in the Bold area with 1,614 t (Figure 12). The highest catch of tiger prawns was recorded in the Limmen Bight area with 581 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 2009.



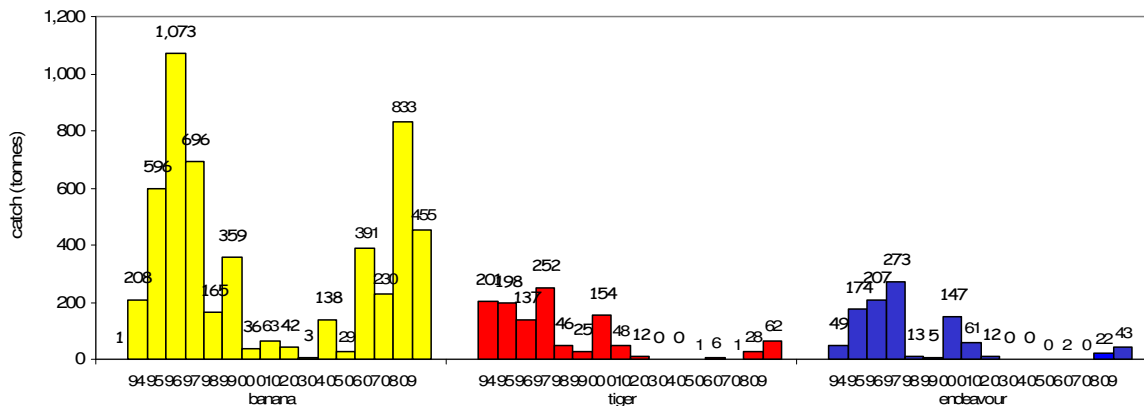
**Figure 13:** Total catch of tiger prawns for each statistical area of the NPF in 2009.



## Weipa

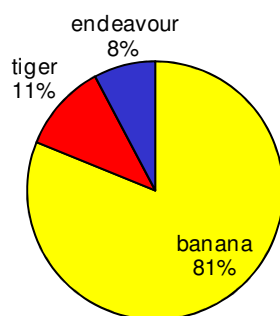
Banana prawn catches decreased from 833 t in 2008 to 455 t in 2009. Tiger prawn catches increased from 28 t in 2008 to 62 t in 2009 and catches of endeavour prawns increased from 22 t in 2008 to 43 t in 2009 (Figure 14). Banana prawns dominated the catch in this area during 2009, comprising 81% (Figure 15).

Effort in the banana prawn fishery decreased from 374 days in 2008 to 245 days in 2009 (Figure 16a). CPUE of banana prawns decreased 2.226 t per day in 2008 to 1.859 t per day in 2009 (Figure 16b). Effort in the tiger prawn fishery increased from 208 days in 2008 to 350 days in 2009 (Figure 16a). Nominal and effective CPUE increased from 0.244 t per day and 0.117 t per day in 2008 to 0.302 t per day and 0.138 t per day, respectively in 2009 (Figure 16c).

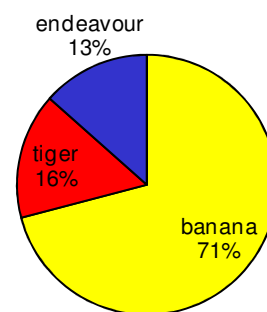


**Figure 14:** Catch by species in the Weipa area between 1994 and 2009.

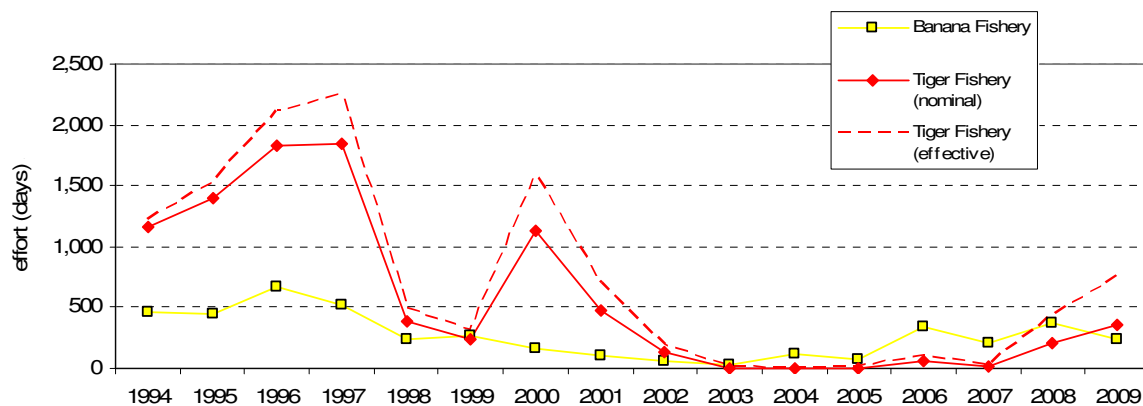
a)



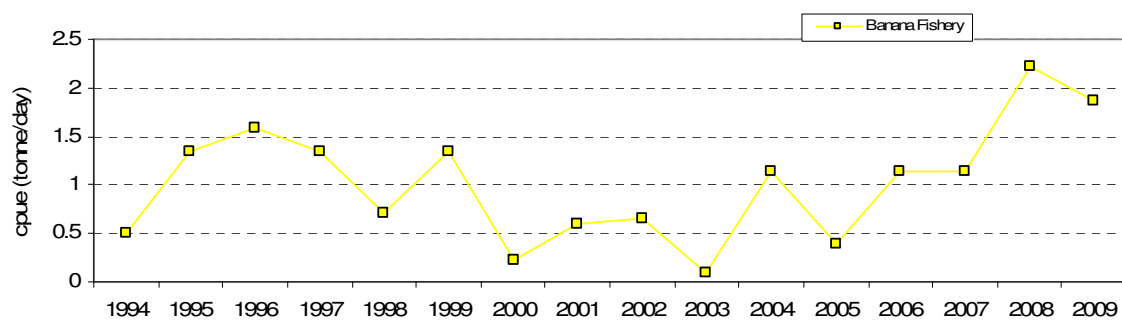
b)



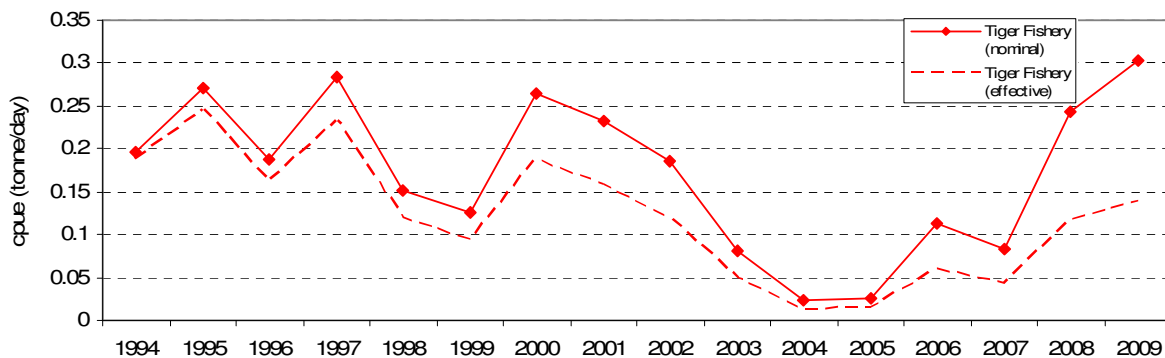
**Figure 15:** Percentage catch of prawn species in the Weipa area during 2009 (a) and percentage catch of prawn species in the Weipa area from 1994 to 2009 (b).



**Figure 16a:** Effort for the banana and tiger prawn fisheries in the Weipa area between 1994 and 2009.



**Figure 16b:** Catch rate for the banana fishery in the Weipa area between 1994 and 2009.

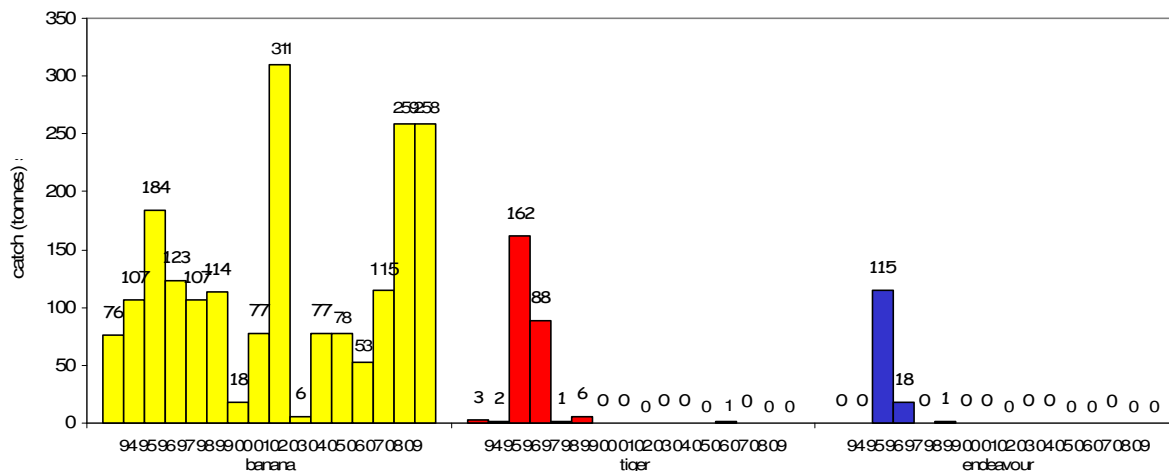


**Figure 16c:** Catch rate for the tiger prawn fishery in the Weipa area between 1994 and 2009.

## Keerweer

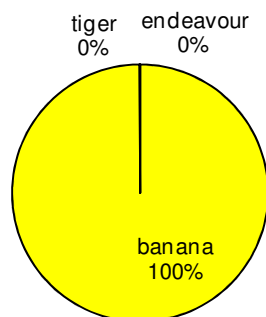
Banana prawn catches in the Keerweer area in 2009 (258 t) remained almost the same as banana prawn catches in 2008 (259 t). Catches of tiger and endeavour prawns was zero (Figure 17). Banana prawns comprised 100% of the catch in 2009 (Figure 18a).

Effort in the banana prawn fishery increased slightly from 122 days in 2008 to 142 days in 2009 (Figure 19a). CPUE of banana prawn decreased from 2.124 t per day in 2008 to 1.818 t per day in 2009 (Figure 19b). Effort and CPUE in the tiger prawn fishery was zero in 2009 (Figure 19a, c).

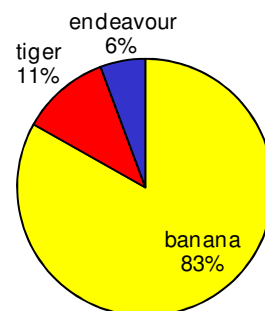


**Figure 17:** Catch by species in the Keerweer area between 1994 and 2009.

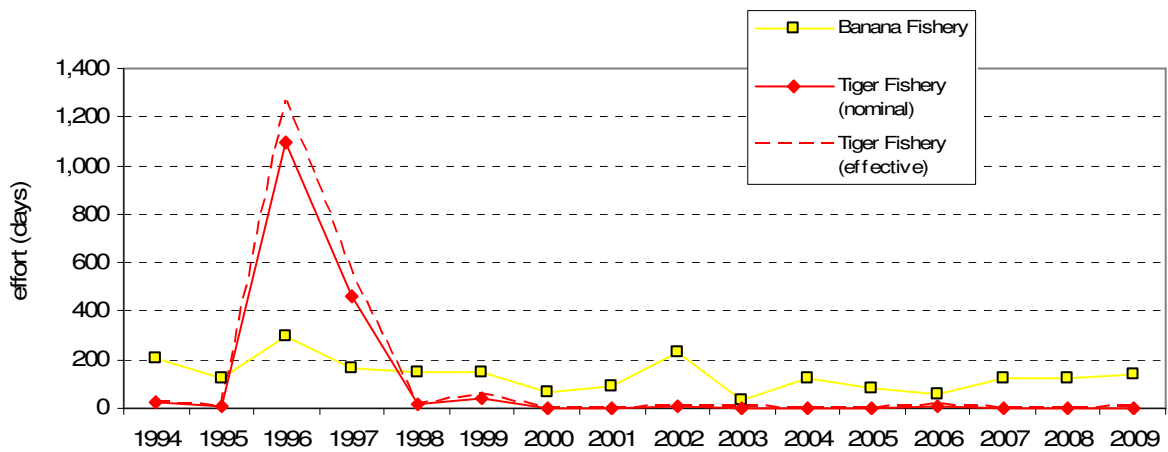
a)



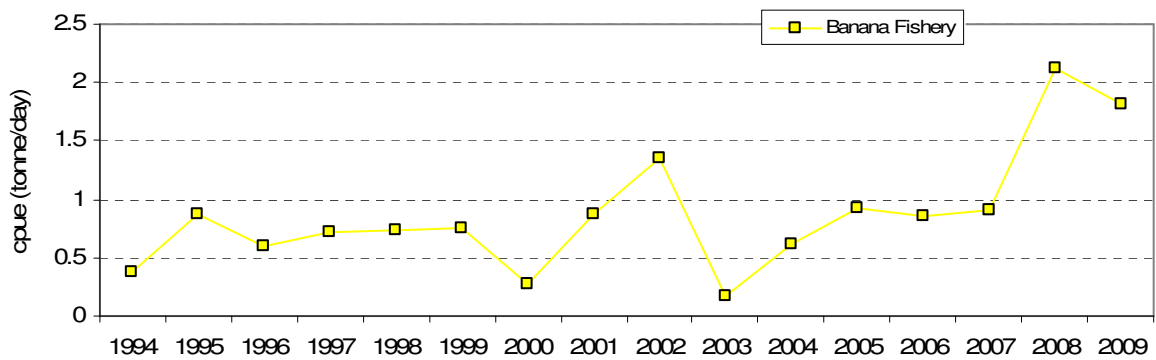
b)



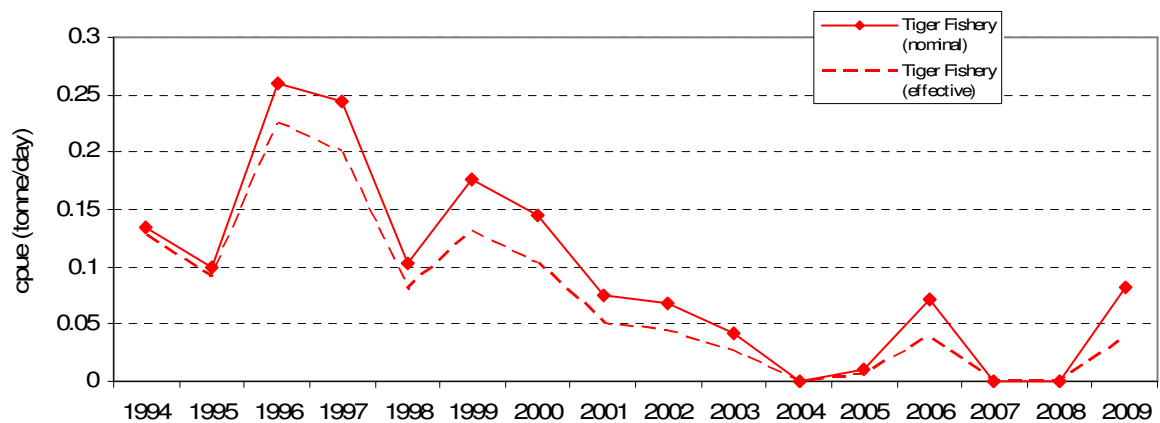
**Figure 18:** Percentage catch of prawn species in the Keerweer area during 2009 (a) and percentage catch of prawn species in the Keerweer area from 1994 to 2009 (b).



**Figure 19a:** Effort for the banana and tiger prawn fisheries in the Keerweer area between 1994 and 2009.



**Figure 19b:** Catch rate for the banana fishery in the Keerweer area between 1994 and 2009.

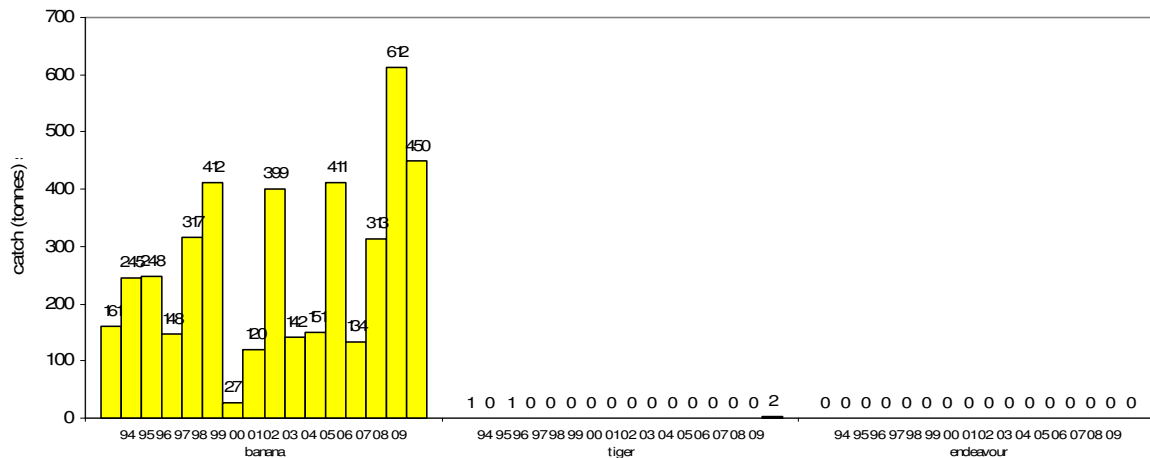


**Figure 19c:** Catch rate for the tiger prawn fishery in the Keerweer area between 1994 and 2009.

## Edward

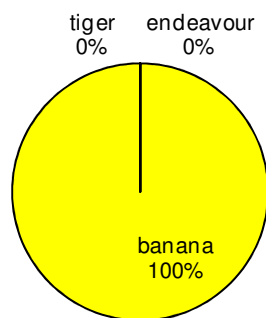
Banana prawn catches in the Edward area decreased from 612 t in 2008 to 450 t in 2009. Tiger and prawn catches increased from 0 t in 2008 to 2 t in 2009, while endeavour prawn catches did not change, remaining at zero (Figure 20). Banana prawns comprised almost 100% of the catch in 2009 (Figure 21).

Effort in the banana prawn fishery decreased 295 days in 2008 to 198 days in 2009 (Figure 22a). CPUE of banana prawn increased from 2.074 t per day in 2008 to 2.274 t per day in 2009 (Figure 22b). Effort and CPUE in the tiger prawn fishery in 2009 was zero (Figure 22a, c).

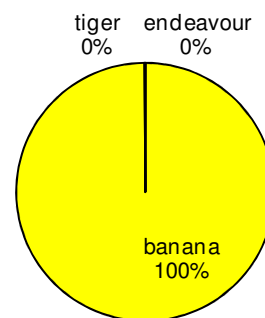


**Figure 20:** Catch by species in the Edward area between 1994 and 2009.

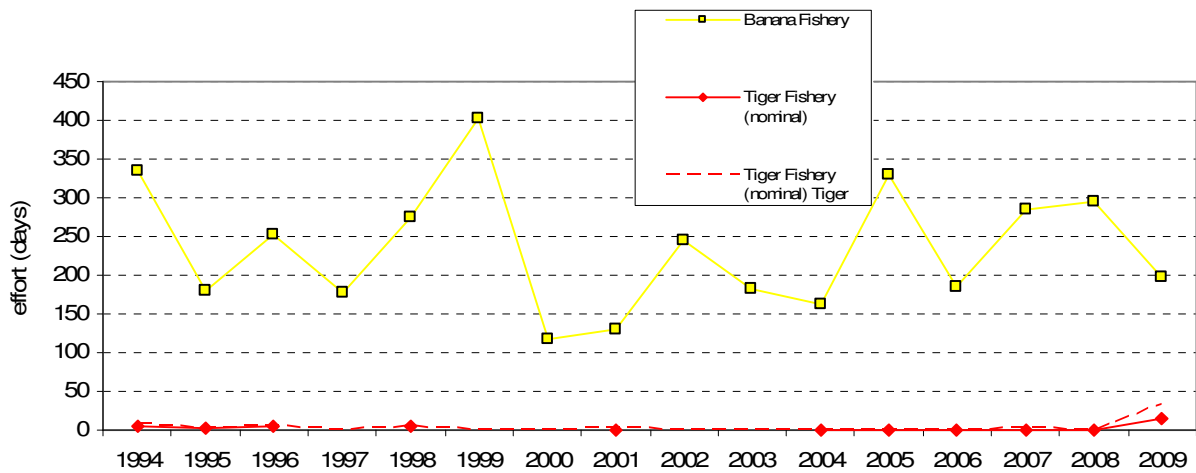
a)



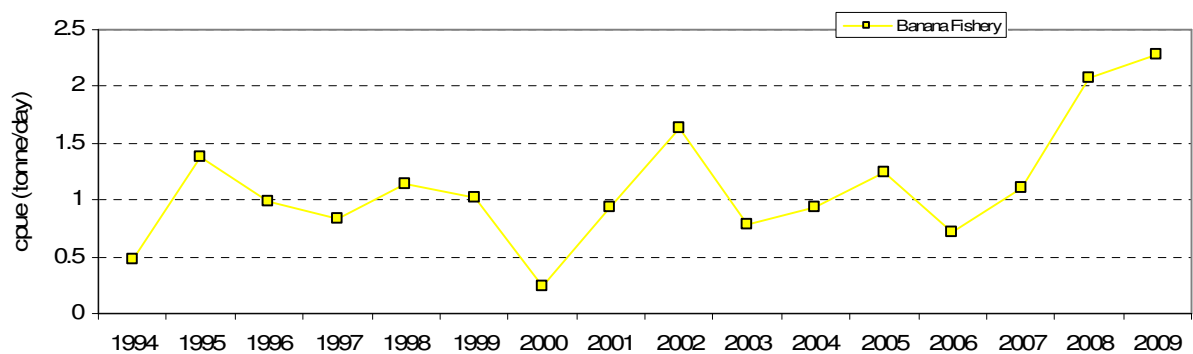
b)



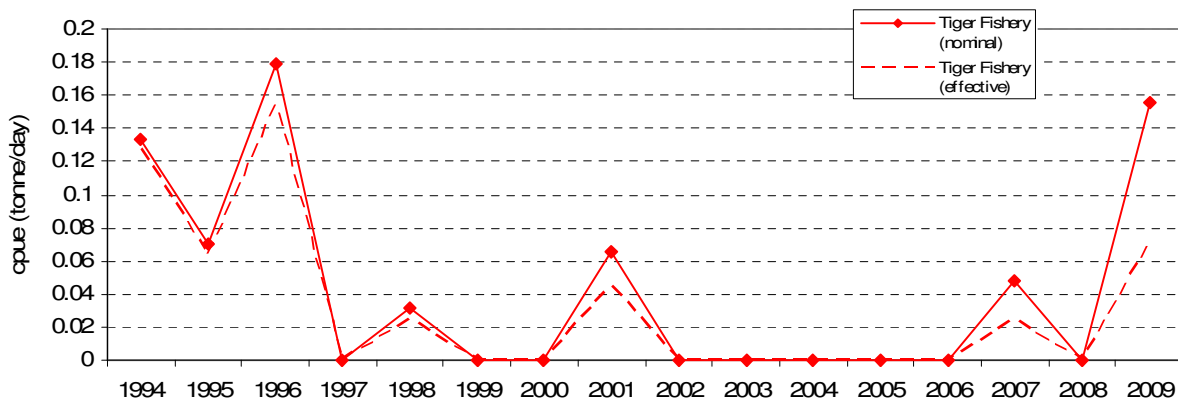
**Figure 21:** Percentage catch of prawn species in the Edward area during 2009 (a) and percentage catch of prawn species in the Edward area from 1994 to 2009 (b).



**Figure 22a:** Effort for the banana and tiger prawn fisheries in the Edward area between 1994 and 2009.



**Figure 22b:** Catch rate for the banana fishery in the Edward area between 1994 and 2009.



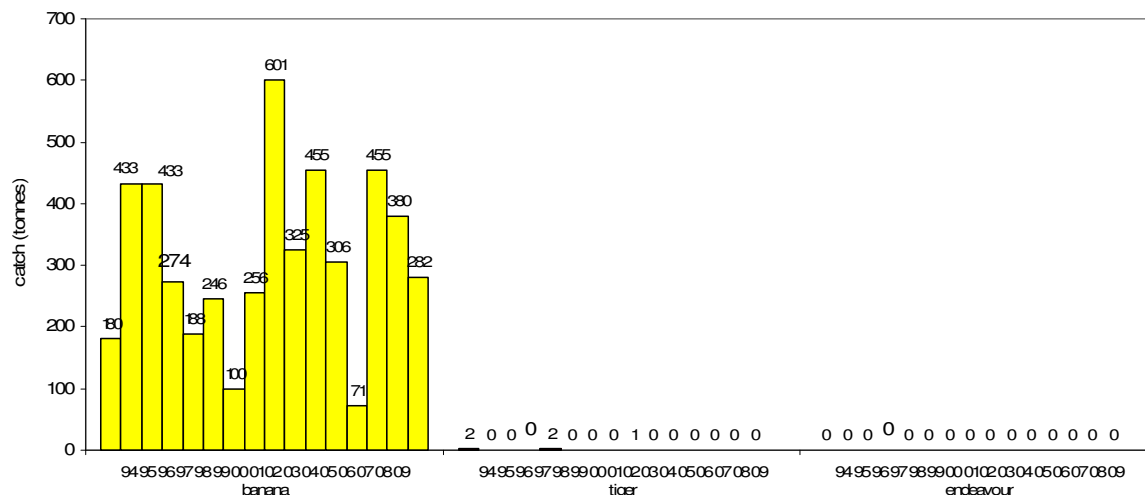
**Figure 22c:** Catch rate for the tiger prawn fishery in the Edward area between 1994 and 2009.



## Mitchell

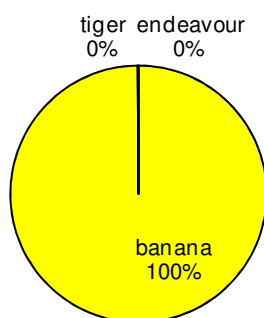
Banana prawn catches in the Mitchell area decreased from 380 t in 2008 to 282 t in 2009. Tiger and endeavour prawn catches did not show any change (Figure 23). Banana prawns comprised 100% of the catch in this area during 2009 (Figure 24).

Effort in the banana prawn fishery decreased from 192 days in 2008 to 160 in 2009 (Figure 25a). CPUE of banana prawn decreased slightly from 1.980 t per day in 2008 to 1.761 t per day in 2009 (Figure 25b). There was no change in effort and CPUE in the tiger prawn fishery in 2009 (Figure 25a, c).

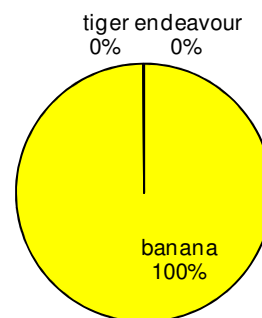


**Figure 23:** Catch by species in the Mitchell area between 1994 and 2009.

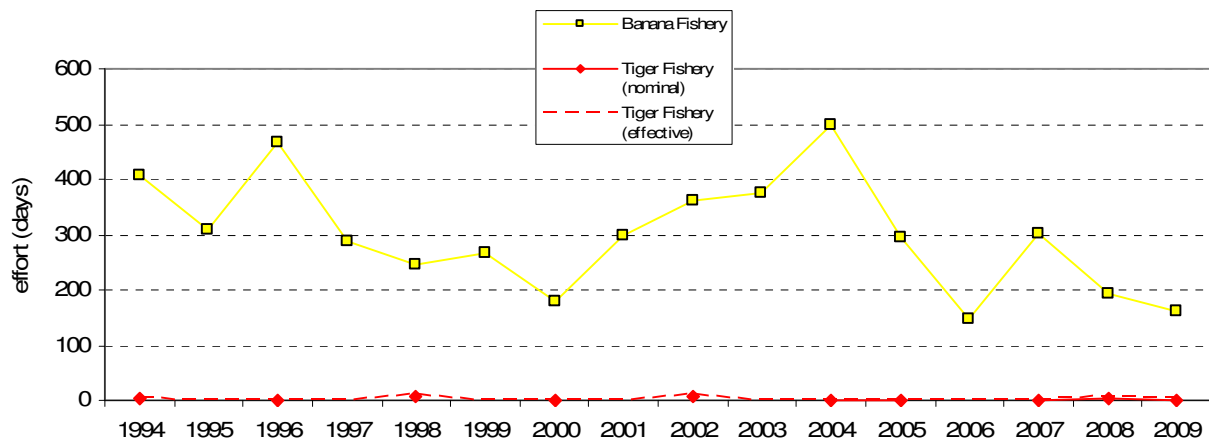
a)



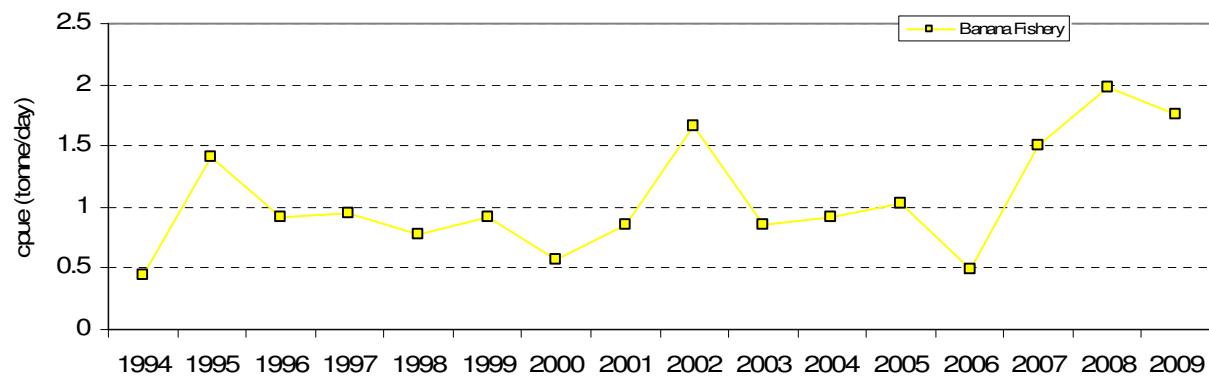
b)



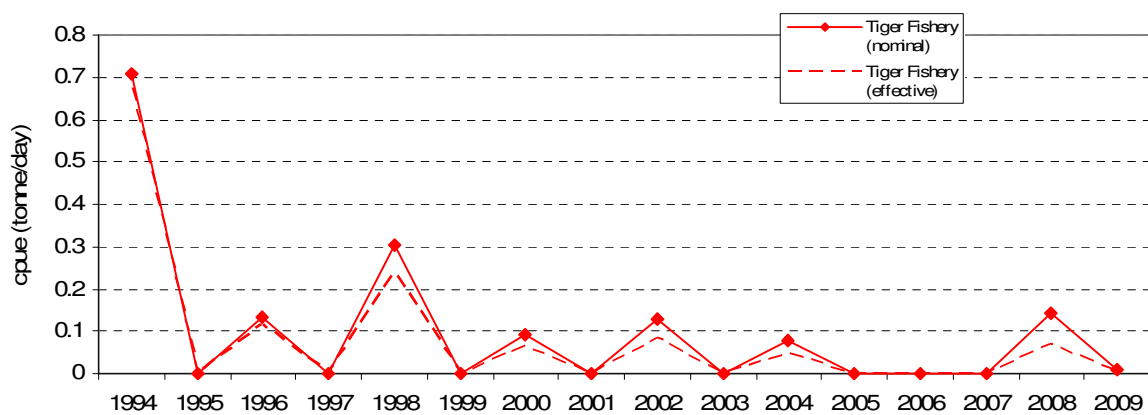
**Figure 24:** Percentage catch of prawn species in the Mitchell area during 2009 (a) and percentage catch of prawn species in the Mitchell area from 1994 to 2009.



**Figure 25a:** Effort for the banana and tiger prawn fisheries in the Mitchell area between 1994 and 2009.



**Figure 25b:** Catch rate for the banana fishery in the Mitchell area between 1994 and 2009.

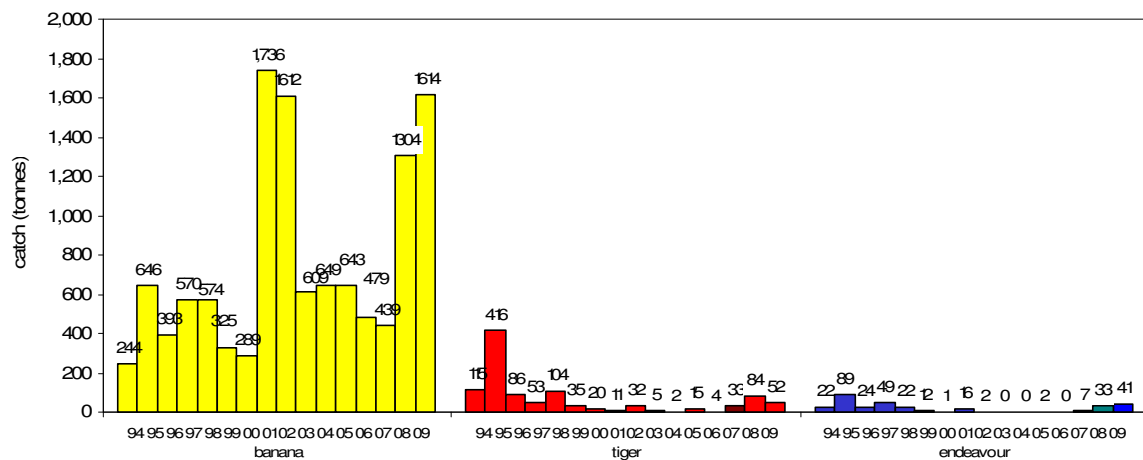


**Figure 25c:** Catch rate for the tiger prawn fishery in the Mitchell area between 1994 and 2009.

## Bold

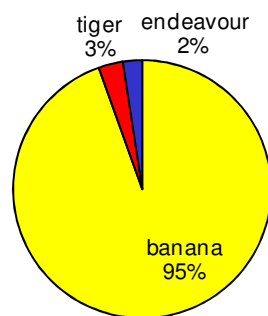
Banana prawn catches in the Bold area increased from 1,302 t in 2008 to 1,614 t in 2009. Catches of tiger prawns decreased from 84 t in 2008 to 52 t in 2009, while endeavour prawns catches increased from 33 t in 2008 to 41 t in 2009 (Figure 26). Banana prawns dominated the catch in this area in 2009, comprising 95% of the catch (Figure 27a).

Effort in the banana prawn fishery increased from 489 days in 2008 to 531 days in 2009 (Figure 28a). CPUE of banana prawn increased from 2.661 t per day in 2008 to 3.040 t per day in 2009 (Figure 28b). Effort in the tiger prawn fishery approximately halved from 327 days in 2008 to 168 days in 2009 (Figure 28a). Nominal and effective CPUE increased from 0.366 t per day and 0.176 t per day in 2008 to 0.559 t per day and 0.256 t per day in 2009, respectively (Figure 28c).

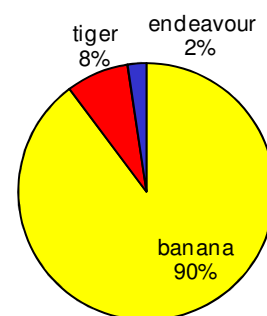


**Figure 26:** Catch by species in the Bold area between 1994 and 2009.

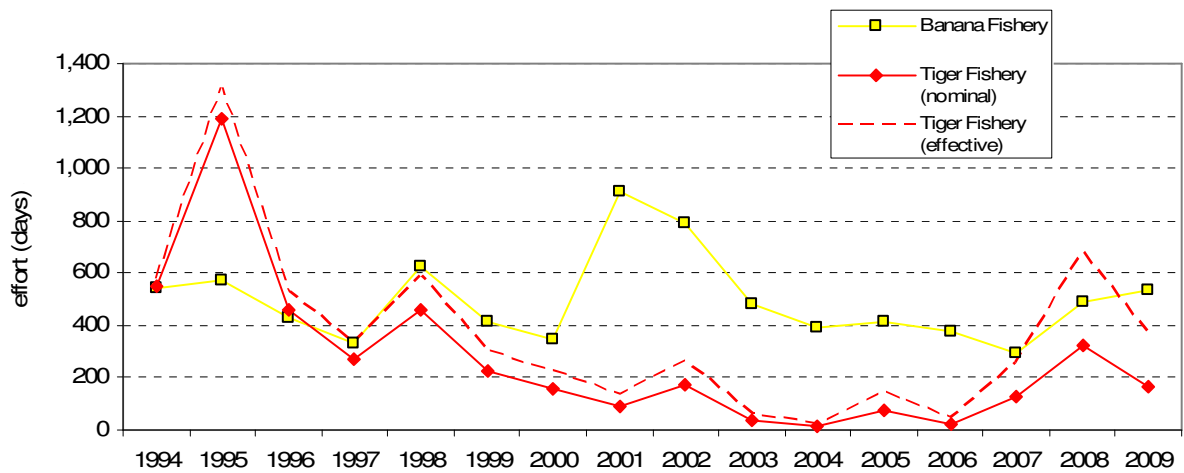
a)



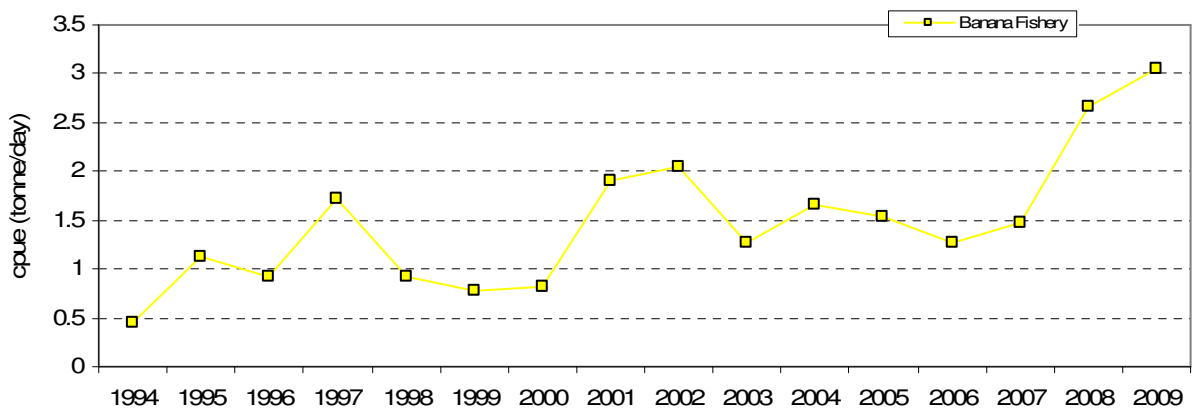
b)



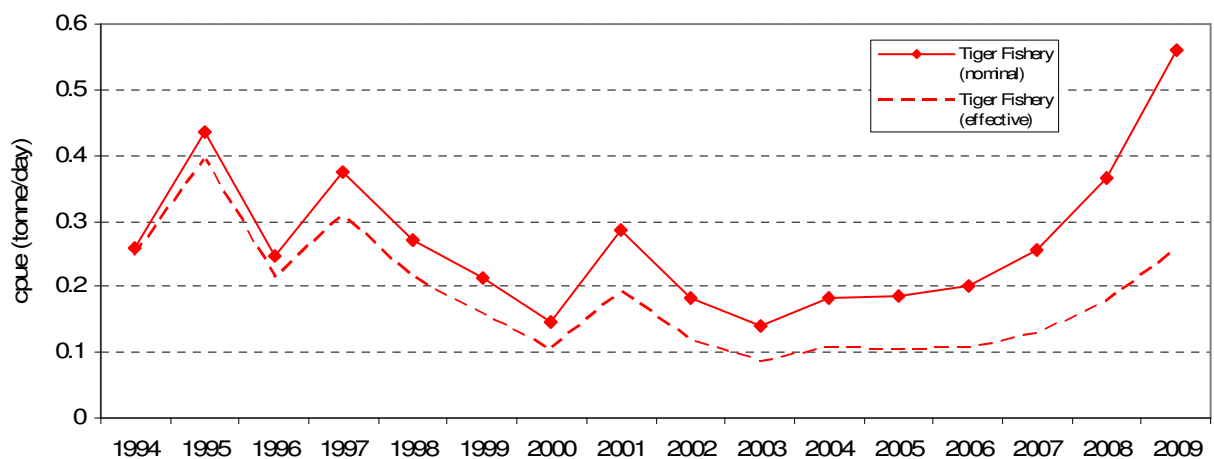
**Figure 27:** Percentage catch of prawn species in the Bold area during 2009 (a) and catch of prawn species in the Bold area from 1994 to 2009 (b).



**Figure 28a:** Effort for the banana and tiger prawn fisheries in the Bold area between 1994 and 2009.



**Figure 28b:** Catch rate for the banana fishery in the Bold area between 1994 and 2009.

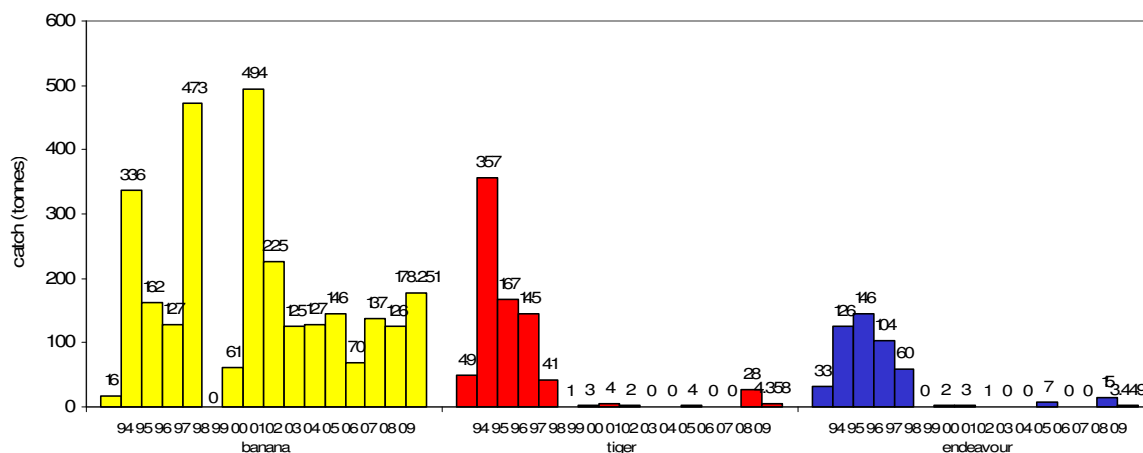


**Figure 28c:** Catch rate for the tiger prawn fishery in the Bold area between 1994 and 2009.

## Sweers

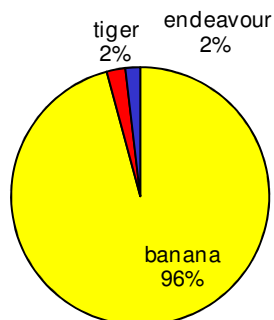
Banana prawn catches in the Sweers area increased from 126 t in 2008 to 178 t in 2009. There were no catches of tiger and endeavour prawns in 2007. Catches of tiger and endeavour prawns decreased from 28 t and 15 t in 2008 to 4 t and 3 t in 2009, respectively (Figure 29). Banana prawns comprised 97% of the catch for 2009 (Figure 30).

Effort in the banana fishery decreased slightly from 63 days in 2008 to 61 days in 2009 (Figure 31a). CPUE of banana prawn increased from 2.000 in 2008 to 2.924 in 2009 (Figure 31b). Effort in the tiger prawn fishery decreased significantly from 115 days in 2008 to 11 days in 2009 (Figure 31a). Nominal and effective CPUE for 2009 was 0.702 t per day and 0.322 t per day, respectively (Figure 31c).

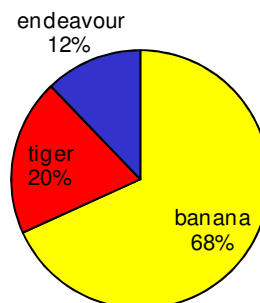


**Figure 29:** Catch by species in the Sweers area between 1994 and 2009.

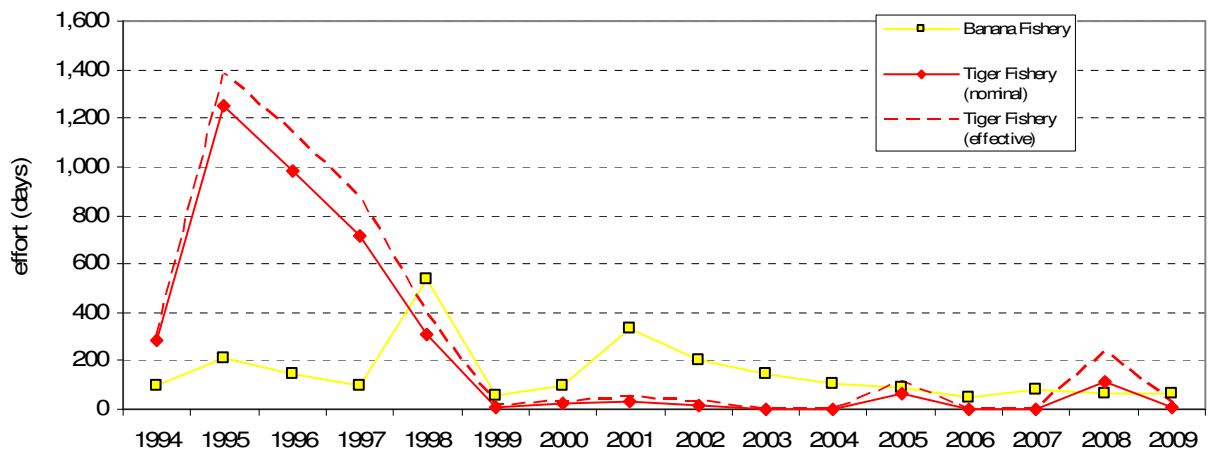
a)



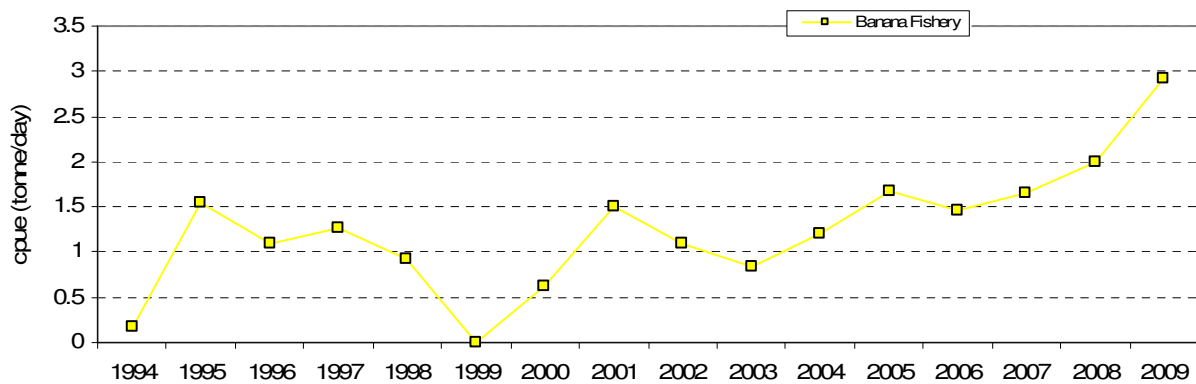
b)



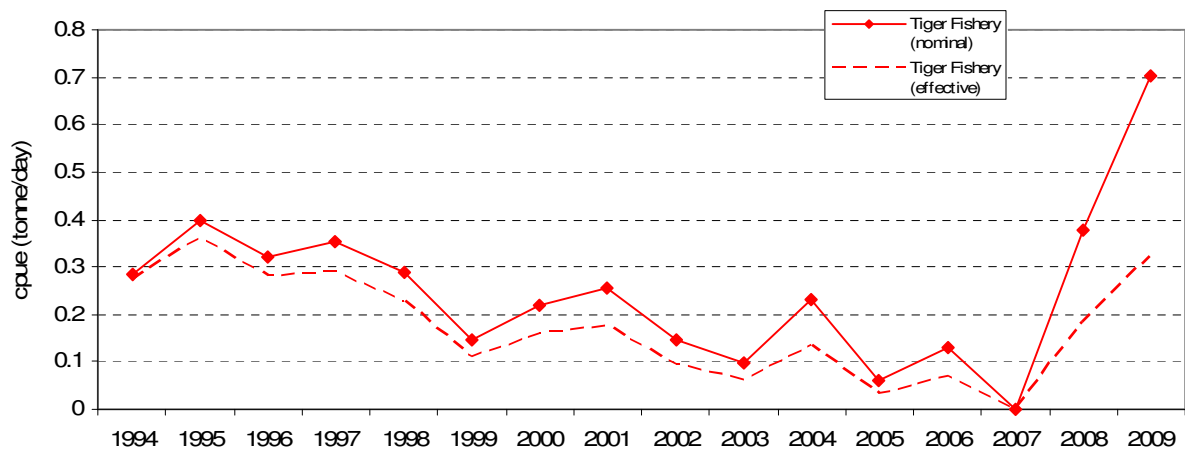
**Figure 30:** Percentage catch of prawn species in the Sweers area during 2009 (a) Percentage catch of prawn species in the Sweers area from 1994 to 2009 (b).



**Figure 31a:** Effort for the banana and tiger prawn fisheries in the Sweers area between 1994 and 2009.



**Figure 31b:** Catch rate for the banana fishery in the Sweers area between 1994 and 2009.



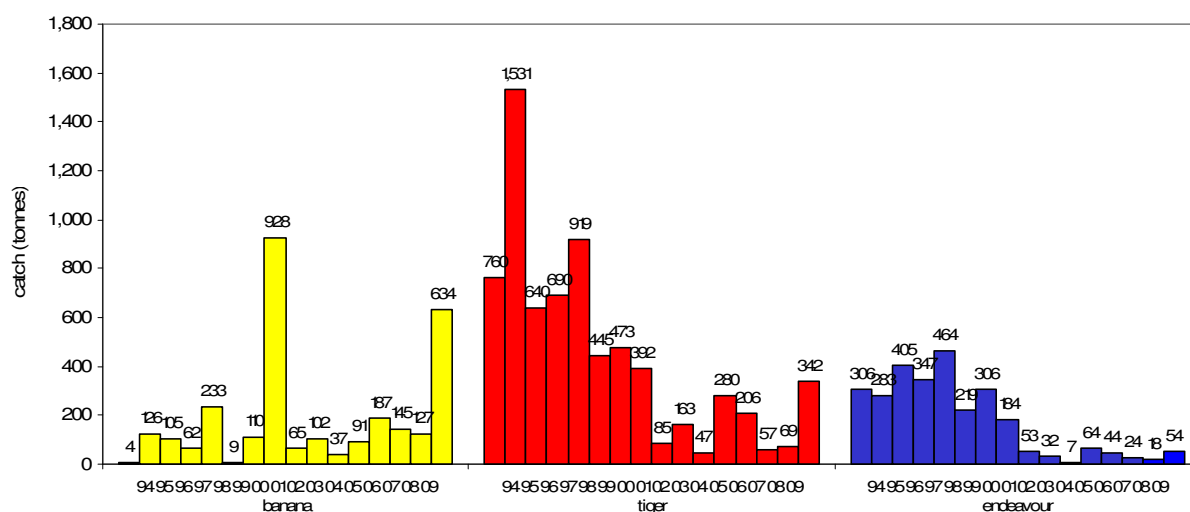
**Figure 31c:** Catch rate for the tiger prawn fishery in the Sweers area between 1994 and 2009.



## Mornington

Banana prawn catches in the Mornington area increased significantly from 127 t in 2008 to 634 t in 2009. Catches of tiger prawns also increased significantly from 69 t in 2008 to 342 t in 2009, while the endeavour prawn catches increased from 18 t in 2008 to 54 t in 2009 (Figure 32). Banana prawns dominated the catch in this area, contributing to 62% of the catch in 2009 (Figure 33).

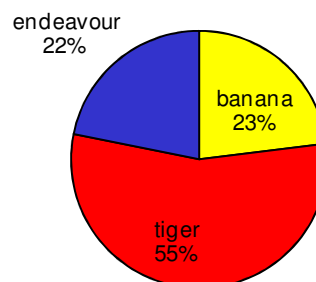
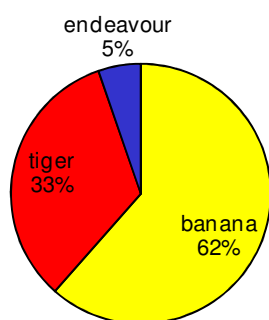
Effort in the banana fishery more than doubled from 134 days in 2008 to 286 days in 2009 (Figure 34a). CPUE of banana prawn increased from 0.975 t per day in 2008 to 2.202 in 2009 (Figure 34b). Effort in the tiger prawn fishery decreased from 315 days in 2008 to 111 days in 2009 (Figure 34a). Nominal and effective CPUE increased from 0.264 t per day and 0.127 t per day in 2008 to 0.361 t per day and 0.165 t per day, respectively in 2008 (Figure 34c).



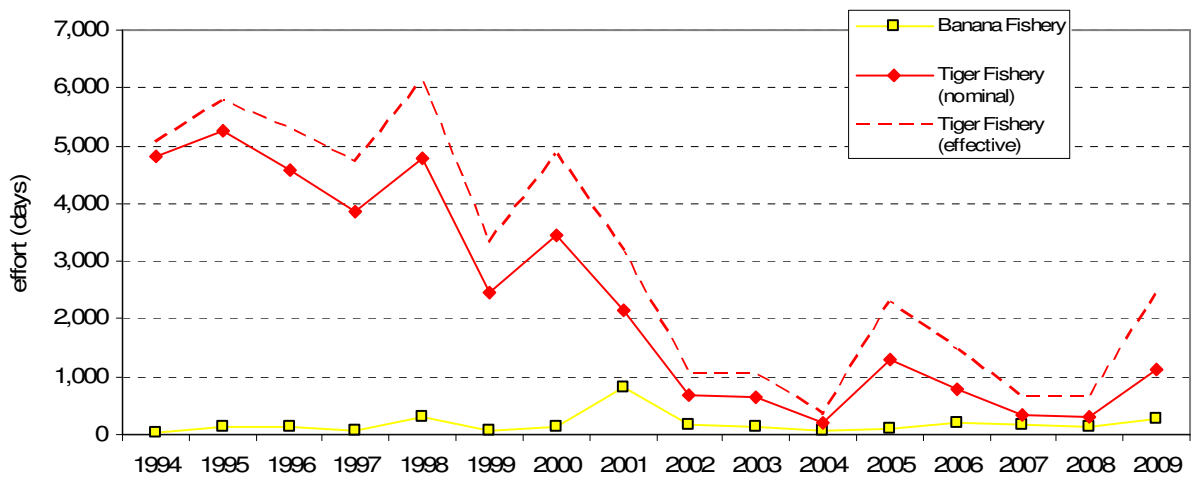
**Figure 32:** Catch by species in the Mornington area between 1994 and 2009.

a)

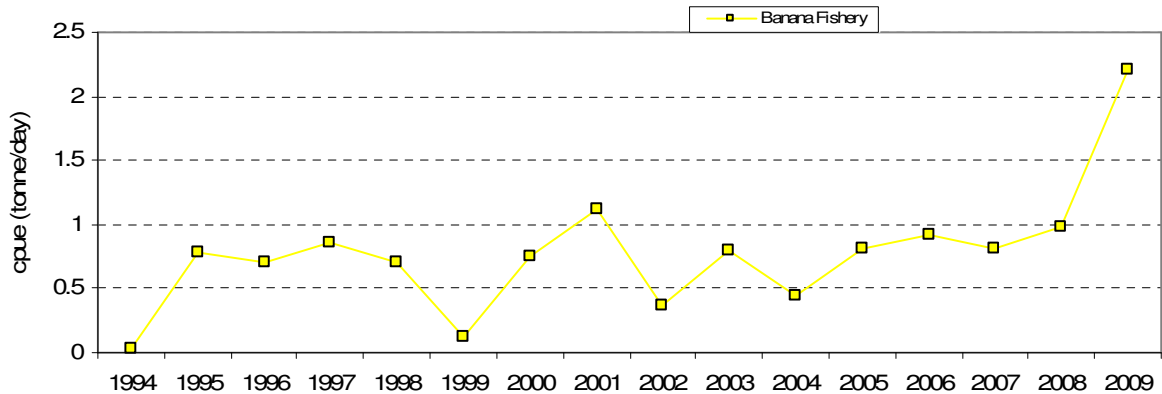
b)



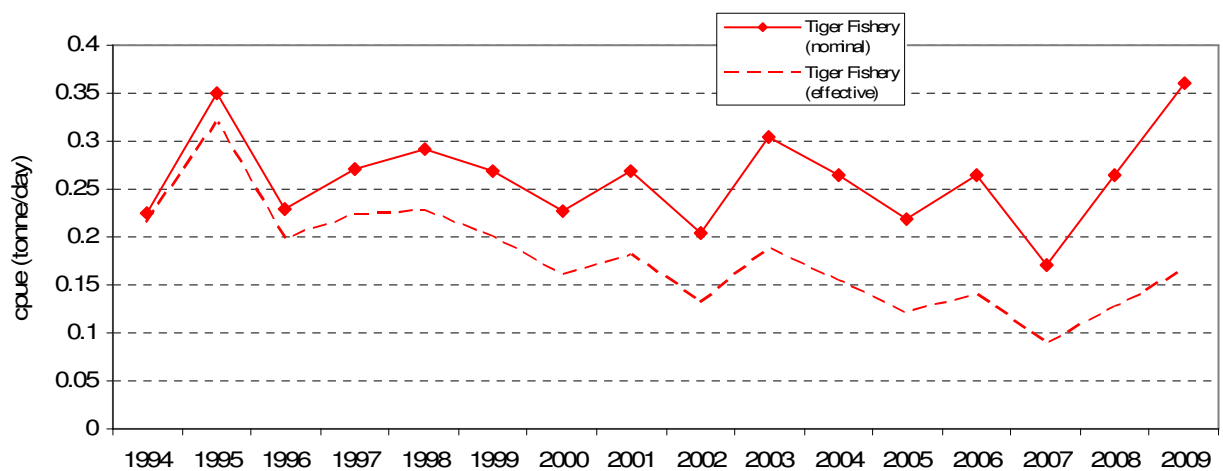
**Figure 33:** Percentage catch of prawn species in the Mornington area during 2009 (a) and percentage catch of prawn species in the Mornington area from 1994 to 2009 (b).



**Figure 34a:** Effort for the banana and tiger prawn fisheries in the Mornington area between 1994 and 2009.



**Figure 34b:** Catch rate for the banana fishery in the Mornington area between 1994 and 2009.

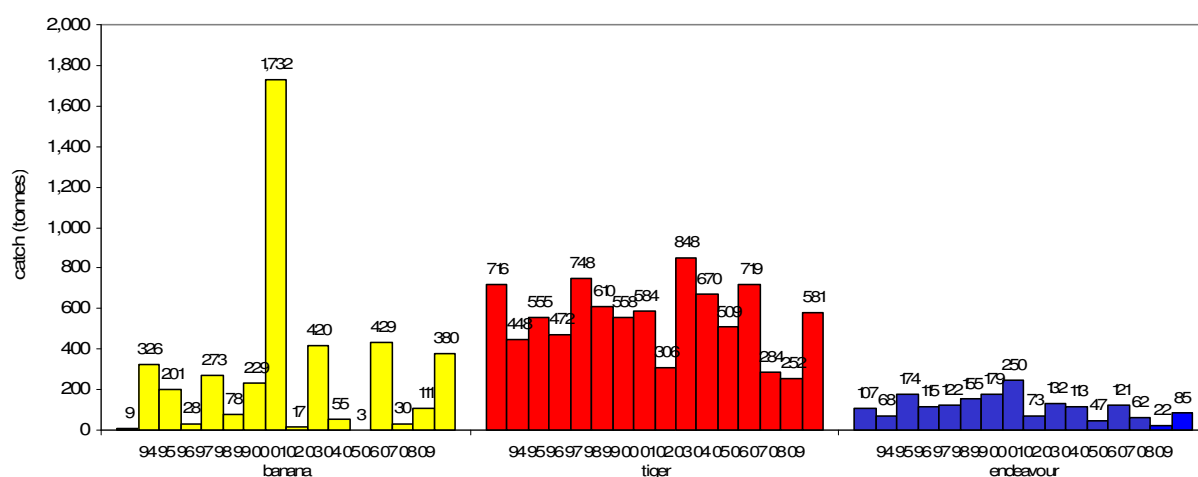


**Figure 34c:** Catch rate for the tiger prawn fishery in the Mornington area between 1994 and 2009.

## Limmen Bight

Banana prawn catches in the Limmen Bight area significantly increased from 111 t in 2008 to 380 t in 2009. Catches of tiger prawns also significantly increased from 252 t in 2008 to 581 t in 2009. Endeavour prawn catches increased from 22 t in 2008 to 85 t in 2009 (Figure 35). Tiger prawns dominated in catch for 2009 in this area, contributing to 65% of the catch (Figure 36).

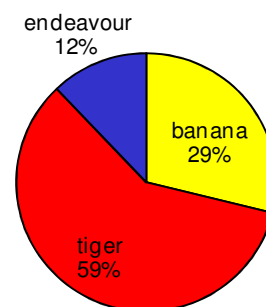
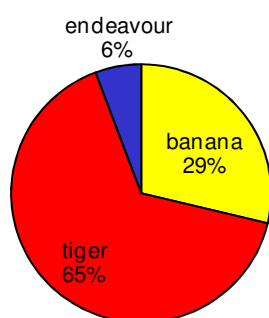
Effort in the banana fishery more than doubled from 128 days in 2008 to 272 days in 2009 (Figure 37a). CPUE of banana prawn increased from 0.878 t per day in 2008 to 1.419 t per day in 2009 (Figure 37b). Effort in the tiger prawn fishery increased from 1079 days in 2008 to 1951 days in 2009 (Figure 37a). Nominal and effective CPUE increased from 0.253 t per day and 0.121 t per day in 2008 to 0.338 t per day and 0.155 t per day, respectively in 2009 (Figure 37c).



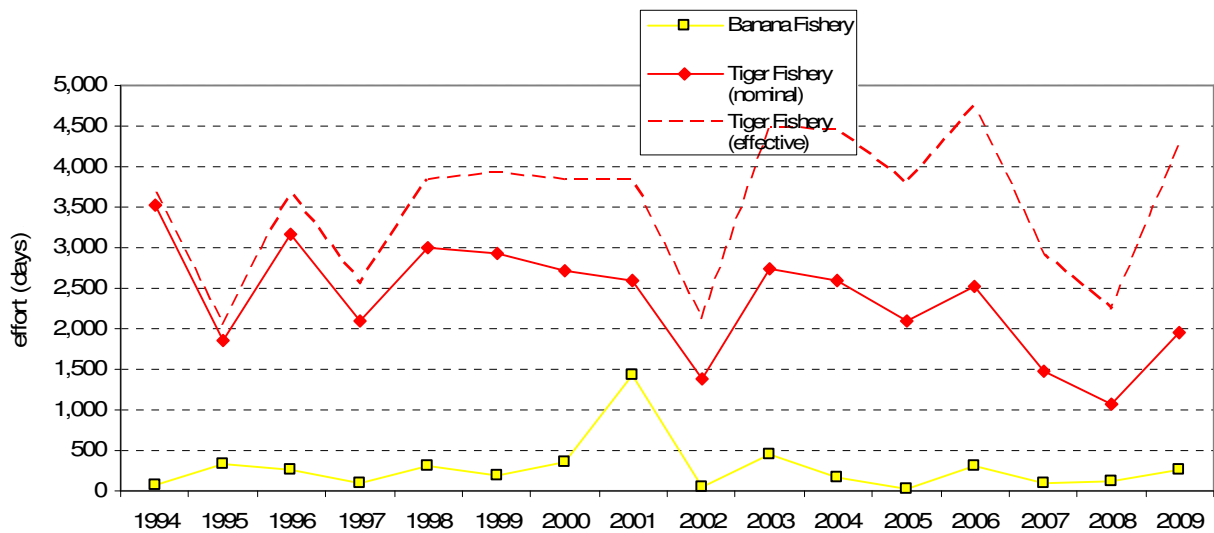
**Figure 35:** Catch by species in the Limmen Bight area between 1994 and 2009.

a)

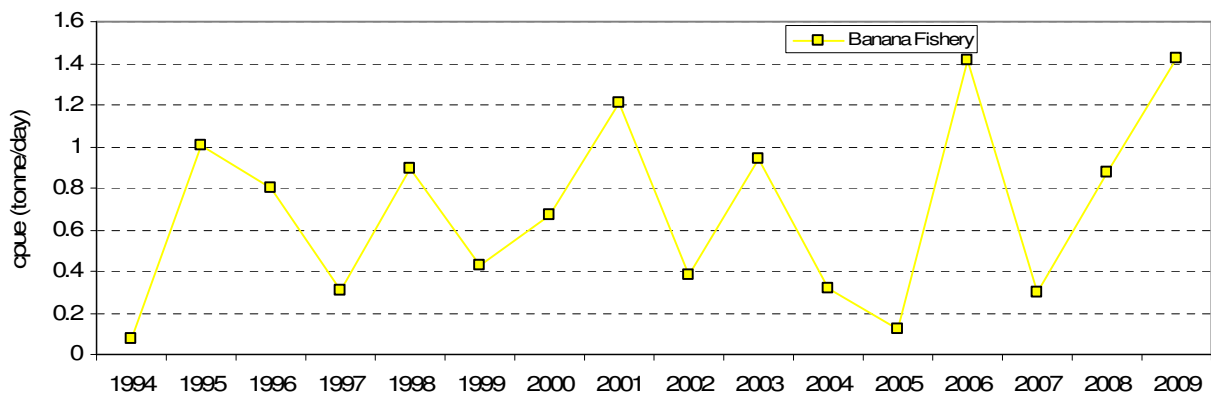
b)



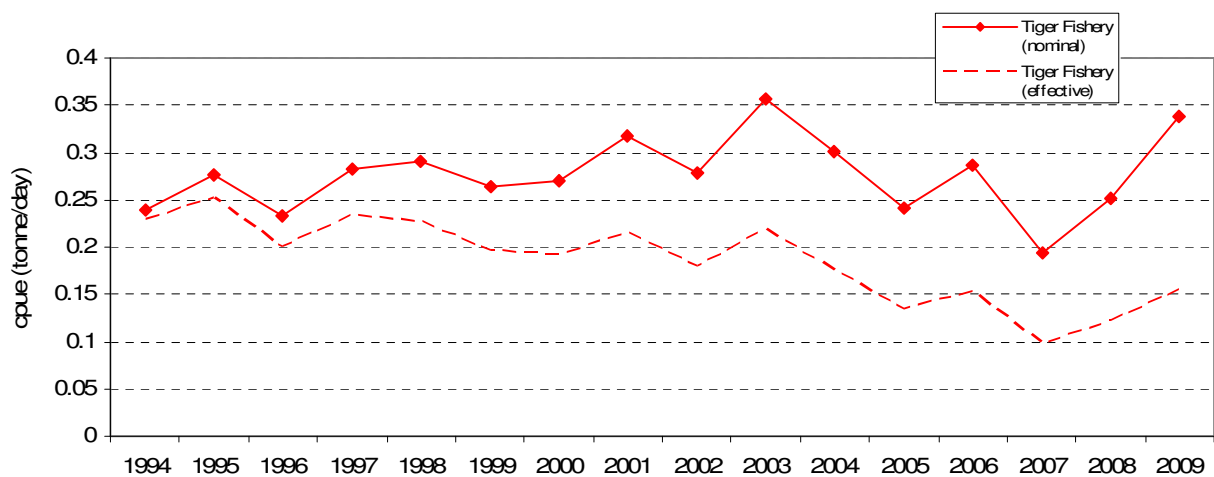
**Figure 36:** Percentage catch of prawn species in the Limmen Bight area during 2009 (a) and percentage catch of prawn species in the Limmen Bight area from 1994 to 2009 (b).



**Figure 37a:** Effort for the banana and tiger prawn fisheries in the Limmen Bight area between 1994 and 2009.



**Figure 37b:** Catch rate for the banana fishery in the Limmen Bight area between 1994 and 2009.

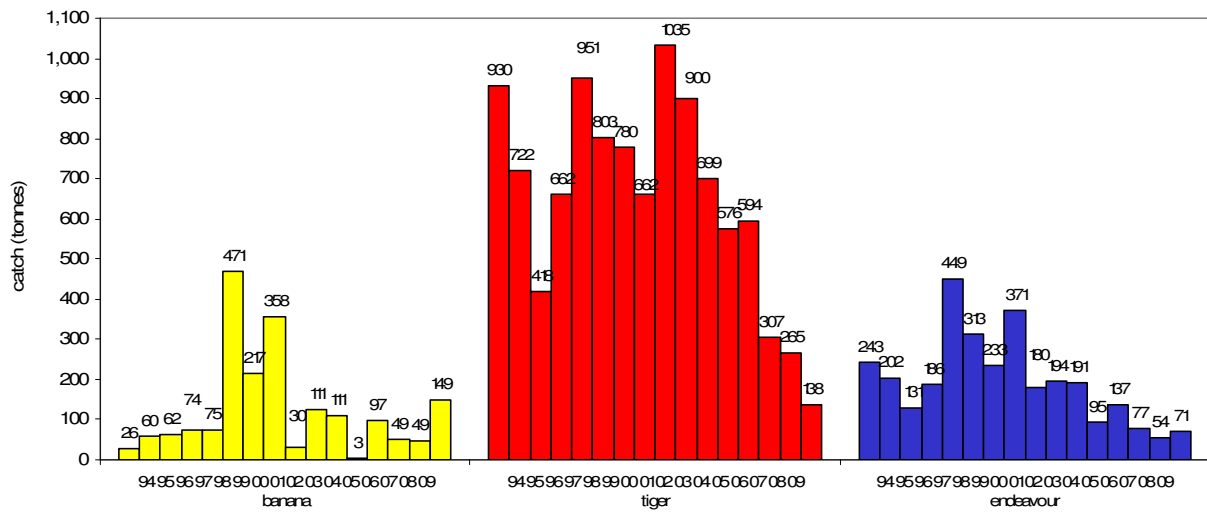


**Figure 37c:** Catch rate for the tiger prawn fishery in the Limmen Bight area between 1994 and 2009.

## Groote

Banana prawn catches in the Groote area significantly increased from 49 t in 2008 to 138 t in 2009. Catches of tiger prawns decreased from 265 t in 2008 to 138 t in 2009. Endeavour prawn catches increased from 54 t in 2008 to 71 t in 2009 (Figure 38). Prawn catch composition was made of banana prawns (41%), tiger prawns (39%) and endeavour prawns in 2009 (Figure 39).

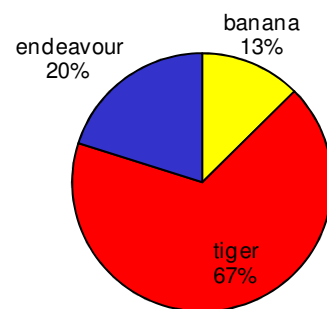
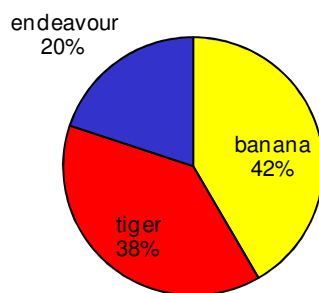
Effort in the banana fishery more than doubled from 71 days in 2008 to 146 days in 2009 (Figure 40a). CPUE of banana prawn increased from 0.702 t per day in 2008 to 1.044 t per day in 2009 (Figure 40b). Effort in the tiger prawn fishery decreased from 1,361 days in 2008 to 818 days in 2009 (Figure 40a). Nominal and effective CPUE increased from 0.234 t per day and 0.112 t per day in 2008 to 0.252 t per day and 0.116 t per day in 2009, respectively (Figure 40c).



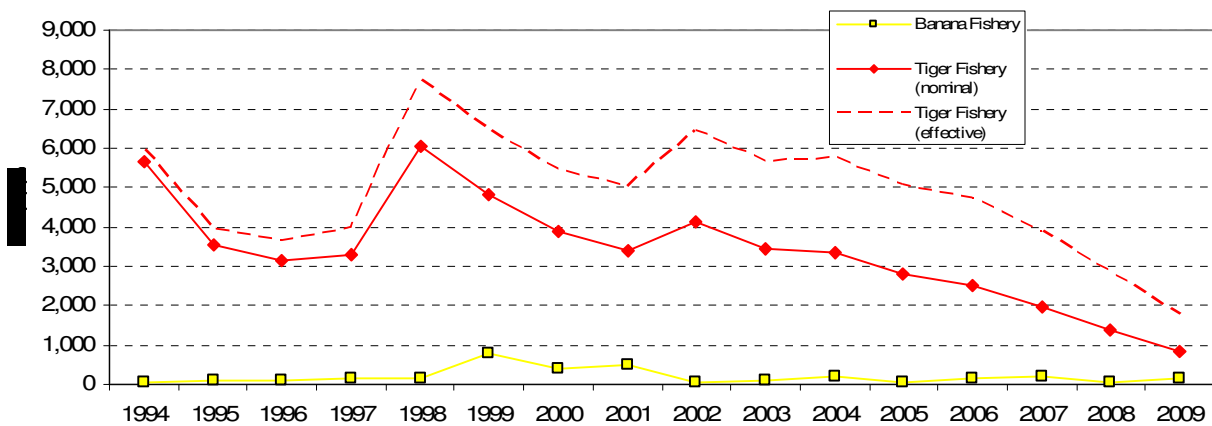
**Figure 38:** Catch by species in the Groote area between 1994 and 2009.

a)

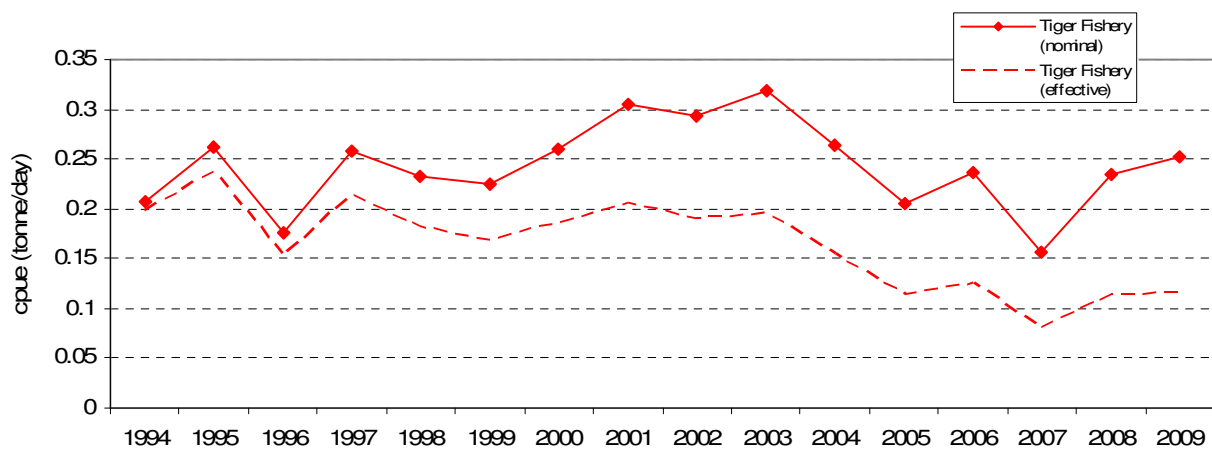
b)



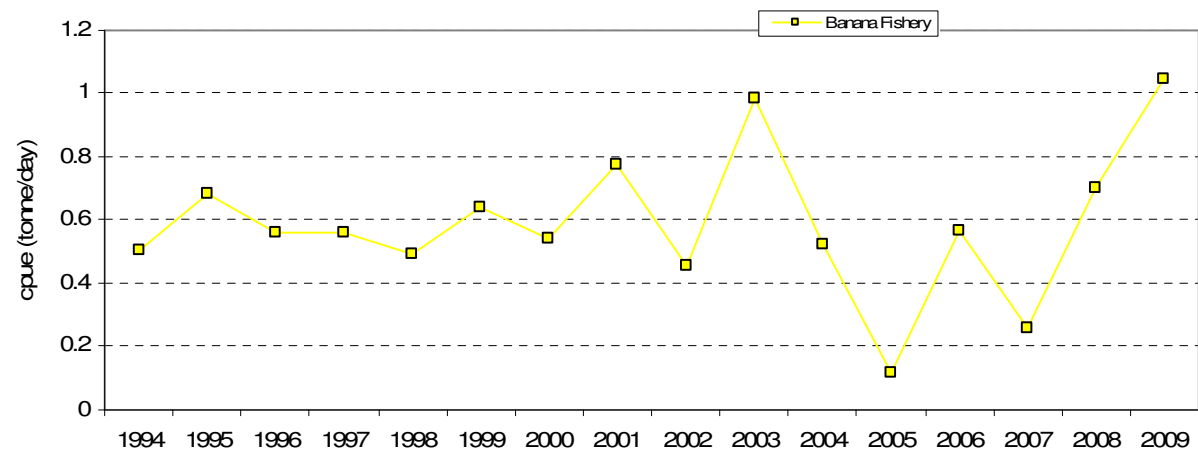
**Figure 39:** Percentage catch of prawn species in the Limmen Bight area during 2009 (a) and percentage catch of prawn species in the Groote area from 1994 to 2009 (b).



**Figure 40a:** Effort for the banana and tiger prawn fisheries in the Groote area between 1994 and 2009.



**Figure 40b:** Catch rate for the tiger prawn fishery in the Groote area between 1994 and 2009.

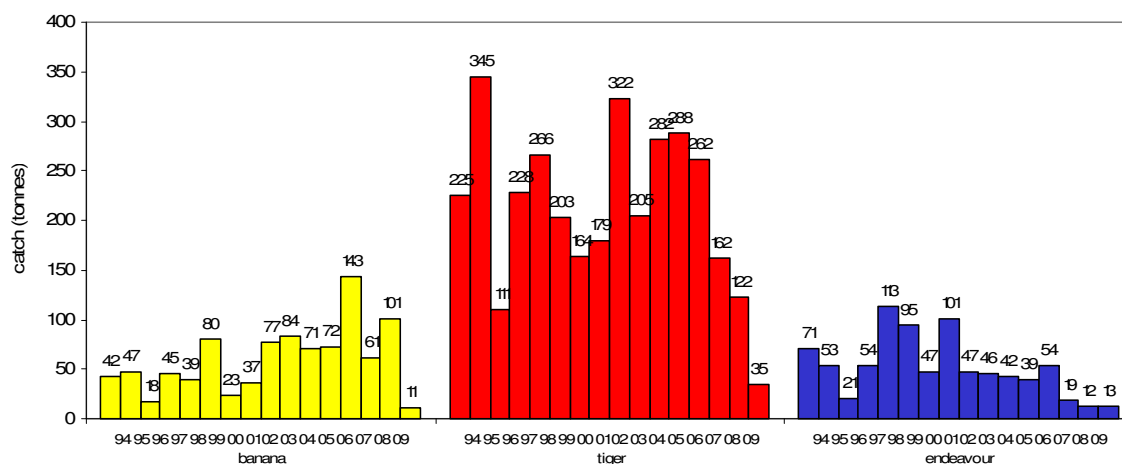


**Figure 40c:** Catch rate for the banana fishery in the Groote area between 1994 and 2009.

## Gove

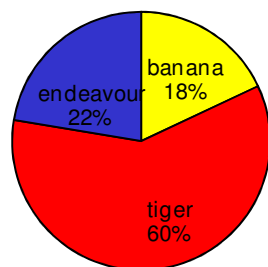
Banana prawn catches in the Gove area decreased from 101 t in 2008 to 11 t in 2009. Catches of tiger prawns decreased from 122 t in 2008 to 35 t in 2009, while endeavour prawn catches increased from 12 t in 2008 to 13 t in 2009 (Figure 41). Tiger prawns dominated the catch for 2008 in this area, contributing to 60% of the catch (Figure 42).

Effort in the banana fishery decreased from 75 days in 2008 to 15 days in 2009 (Figure 43a). CPUE of banana prawn decreased from 1.335 t per day in 2008 to 0.706 (Figure 43b). Effort in the tiger prawn fishery decreased from 562 days in 2008 to 240 days in 2009 (Figure 43a). Nominal and effective CPUE decreased from 0.242 t per day and 0.116 t per day in 2008 to 0.201 t per day and 0.092 t per day, respectively in 2008 (Figure 43c).

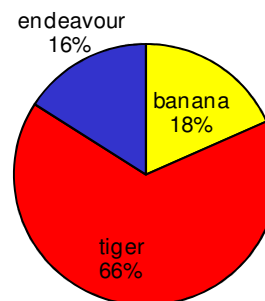


**Figure 41:** Catch by species in the Gove area between 1994 and 2009.

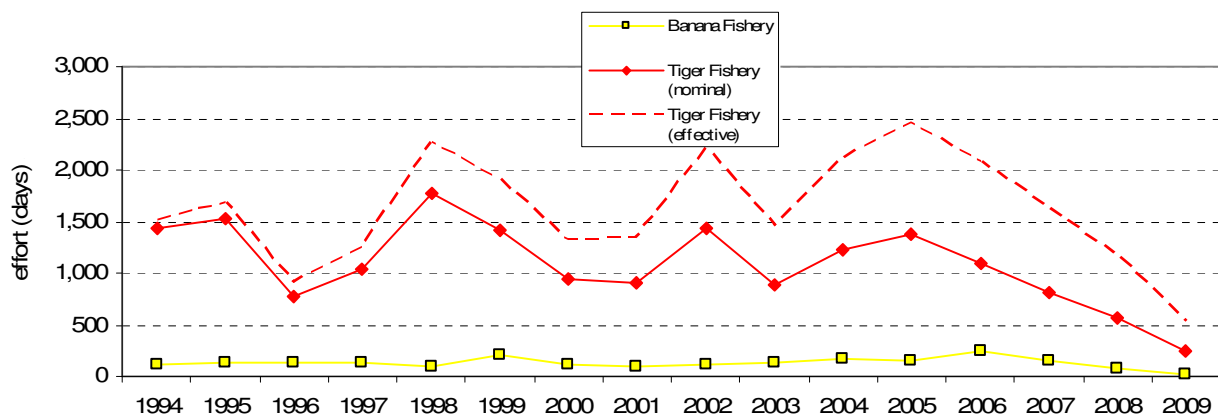
a)



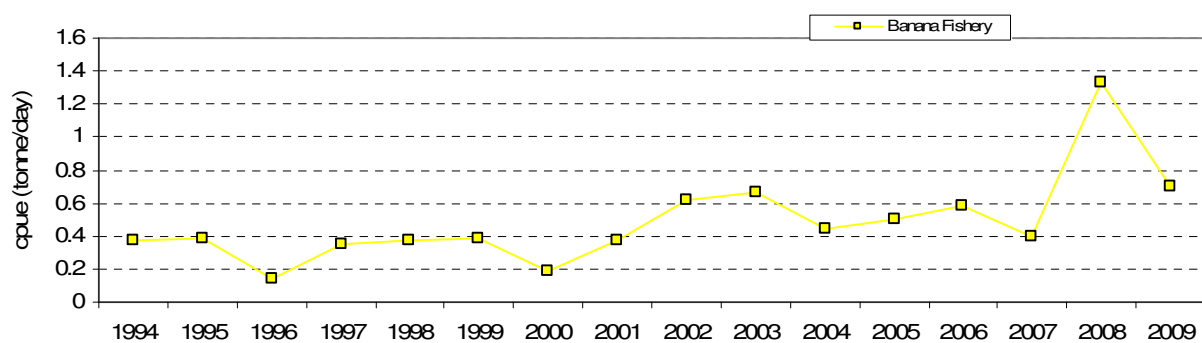
b)



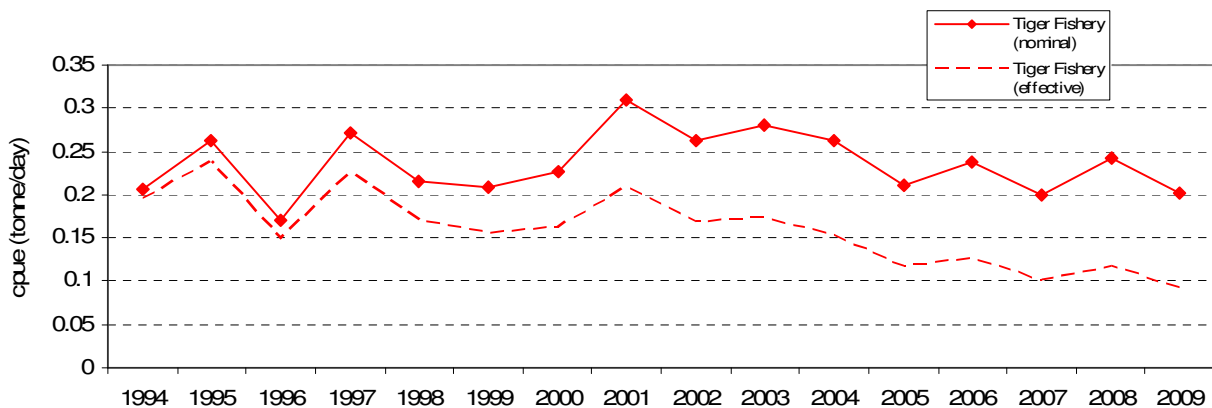
**Figure 42:** Percentage catch of prawn species in the Gove area during 2009 (a) and percentage catch of prawn species in the Gove area from 1994 to 2009 (b).



**Figure 43a:** Effort for the banana and tiger prawn fisheries in the Gove area between 1994 and 2009.



**Figure 43b:** Catch rate for the banana fishery in the Gove area between 1994 and 2009.



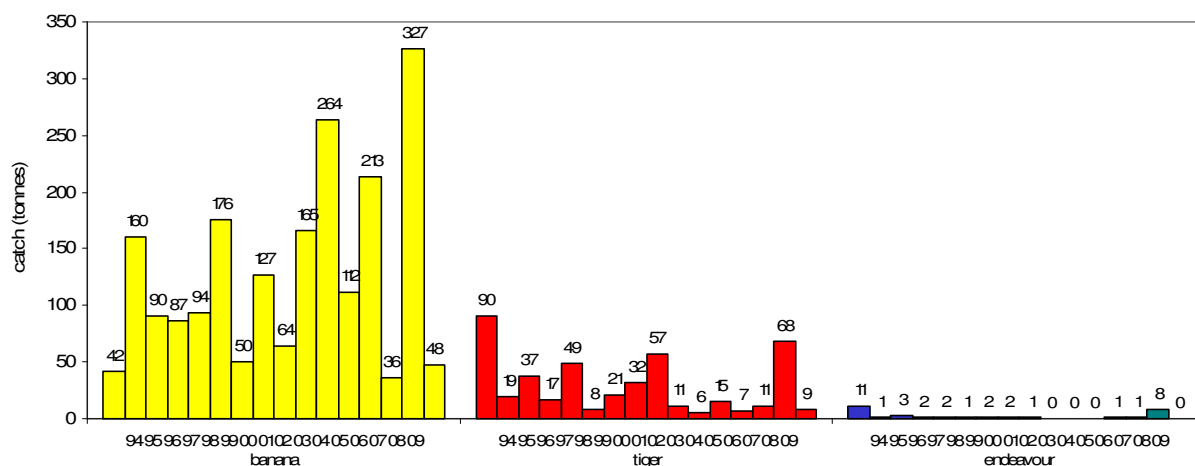
**Figure 43c:** Catch rate for the tiger prawn fishery in the Gove area between 1994 and 2009.



## Arnhem

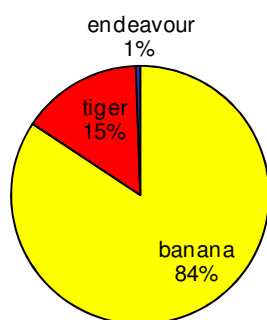
Banana prawn catches in the Arnhem area decreased significantly from 327 t in 2008 to 48 t in 2009. Catches of tiger prawns also decreased significantly from 68 t in 2008 to 9 t in 2009. Endeavour prawn catches decreased from 8 t in 2008 to less than 1 t in 2009 (Figure 44). Banana prawns dominated the catch for 2009 in this area, contributing to 84% of the catch (Figure 45).

Effort in the banana fishery decreased from 176 days in 2008 to 35 days in 2009 (Figure 46a). CPUE of banana prawn decreased from 1.854 t per day in 2008 to 1.374 t per day in 2009 (Figure 46b). Effort in the tiger prawn fishery decreased from 234 days in 2008 to 38 days in 2009 (Figure 46a). Nominal and effective CPUE decreased from 0.242 t per day and 0.116 t per day in 2008 to 0.236 t per day and 0.108 t per day in 2009, respectively (Figure 46c).

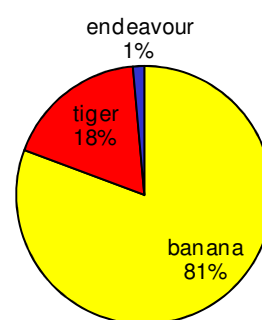


**Figure 44:** Catch by species in the Arnhem area between 1994 and 2009.

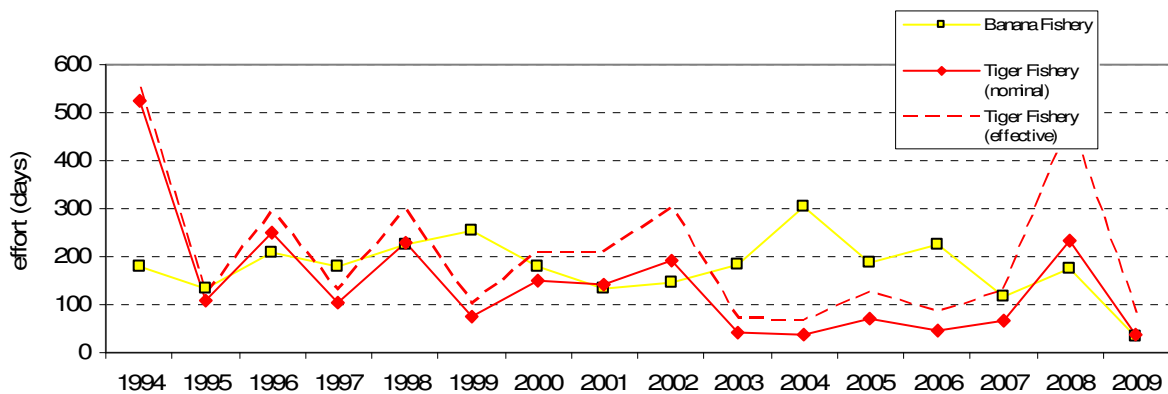
a)



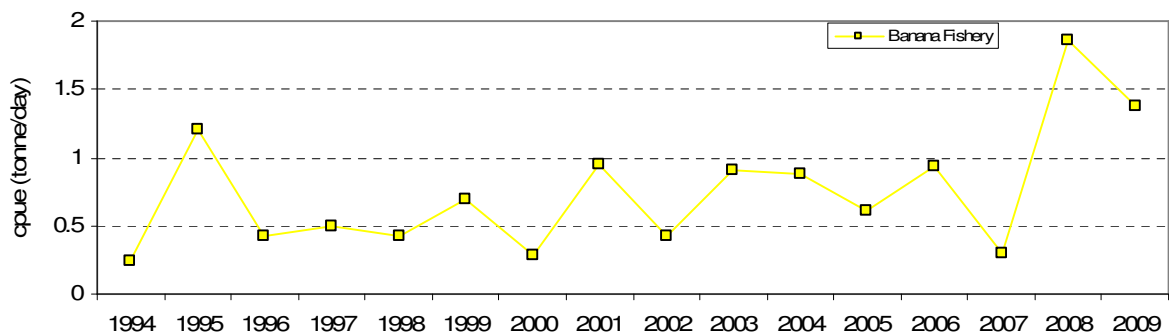
b)



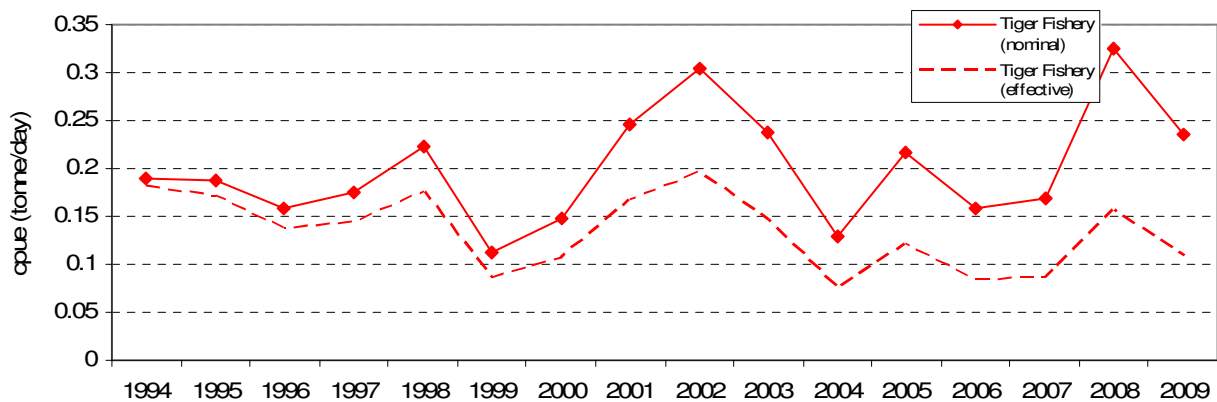
**Figure 45:** Percentage catch of prawn species in the Arnhem area during 2009 (a) and percentage catch of prawn species in the Arnhem area from 1994 to 2009 (b).



**Figure 46a:** Effort for the banana and tiger prawn fisheries in the Arnhem area between 1994 and 2009.



**Figure 46b:** Catch rate for the banana fishery in the Arnhem area between 1994 and 2009.

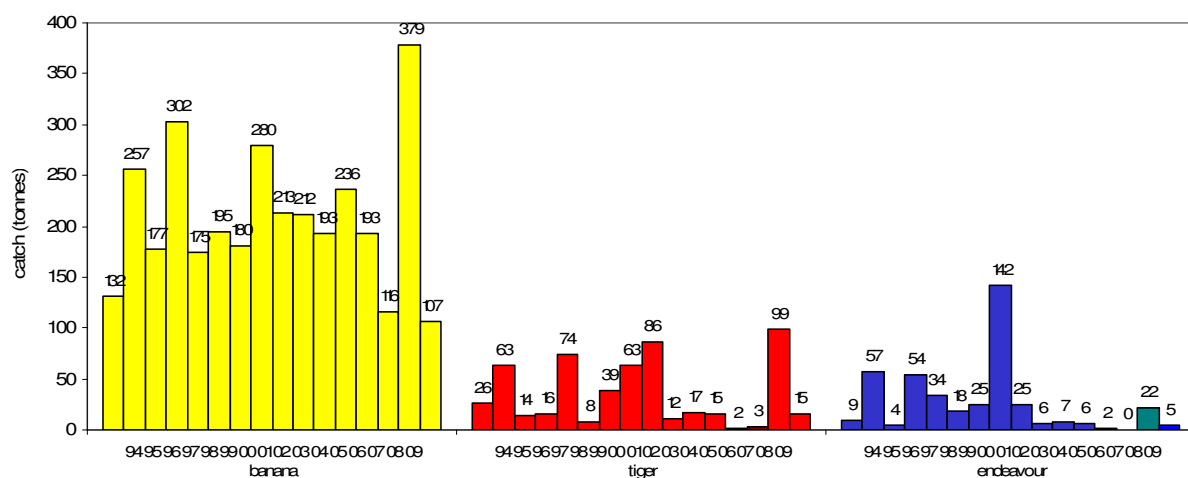


**Figure 46c:** Catch rate for the tiger prawn fishery in the Arnhem area between 1994 and 2009.

## Port Essington

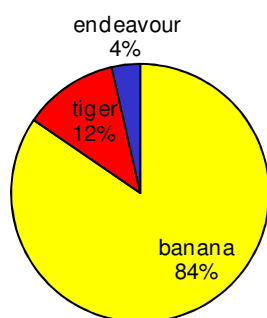
Banana prawn catches in the Port Essington area decreased significantly from 379 t in 2008 to 107 t in 2009. Catches of tiger prawns decreased from 99 t in 2008 to 15 t in 2009. Endeavour prawn catches decreased from 22 t in 2008 to 5 t in 2009 (Figure 47). Banana prawns comprised 84% of the catch in 2009 (Figure 48).

Effort in the banana fishery decreased from 285 days in 2008 to 103 days in 2009 (Figure 49a). CPUE of banana prawn decreased from 1.326 t per day in 2008 to 1.062 t per day in 2009 (Figure 49b). Effort in the tiger prawn fishery decreased from 324 days in 2008 to 51 in 2009 (Figure 49a). Nominal and effective CPUE decreased from 0.377 t per day and 0.181 t per day in 2008 to 0.332 t per day and 0.152 t per day in 2009, respectively (Figure 49c).

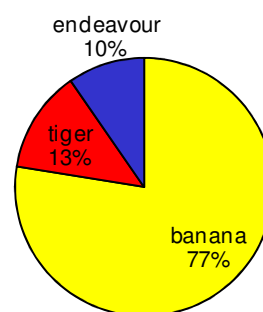


**Figure 47:** Catch by species in the Port Essington area between 1994 and 2009.

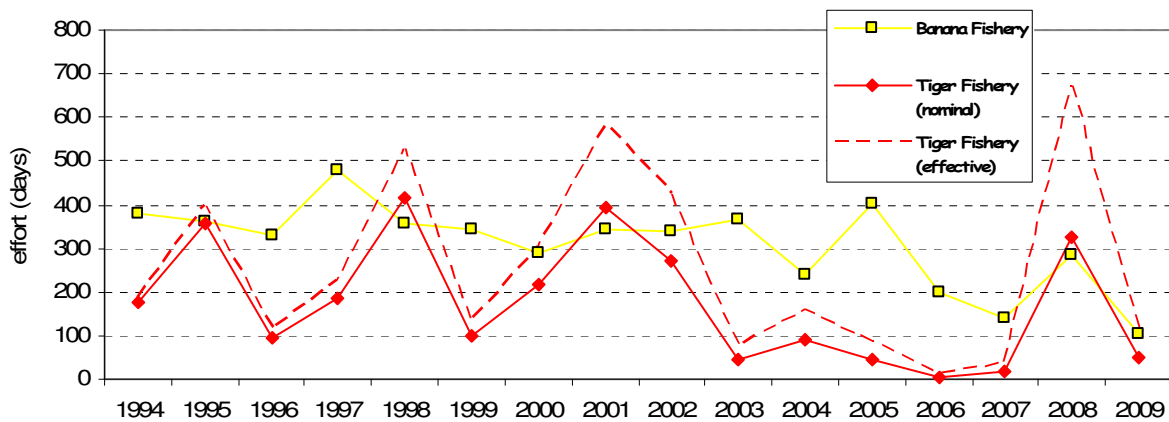
a)



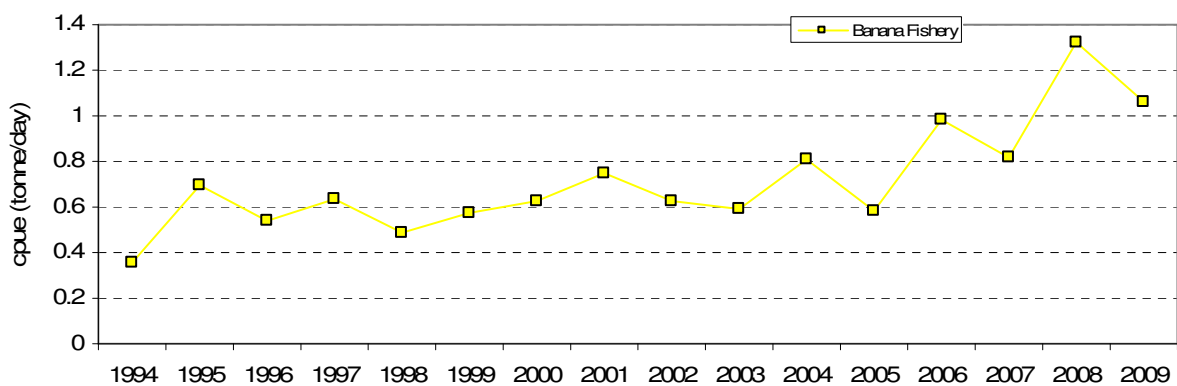
b)



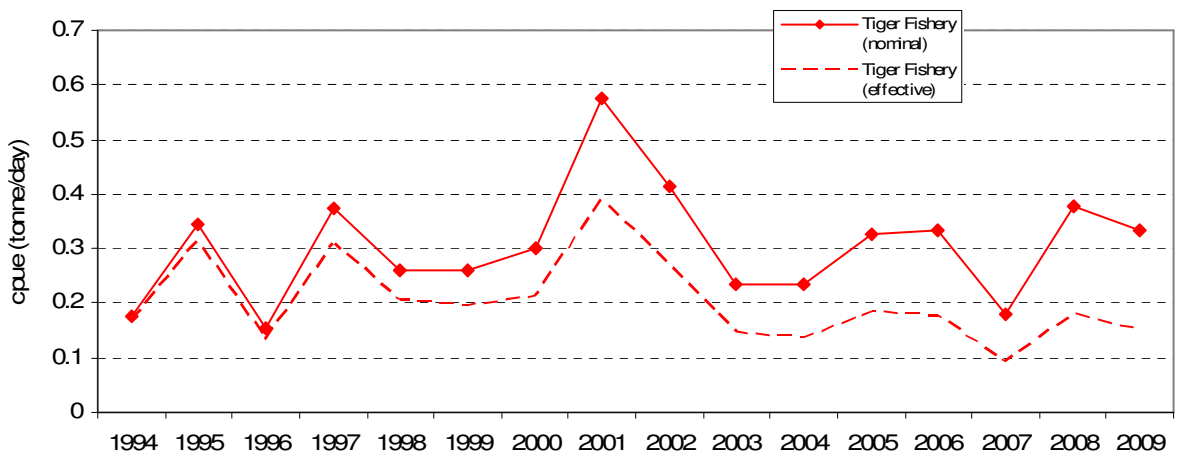
**Figure 48:** Percentage catch of prawn species in the Port Essington area during 2009 (a) percentage catch of prawn species in the Port Essington area from 1994 to 2009 (b).



**Figure 49a:** Effort for the banana and tiger prawn fisheries in the Port Essington area between 1994 and 2009.



**Figure 49b:** Catch rate for the banana fishery in the Port Essington area between 1994 and 2009.

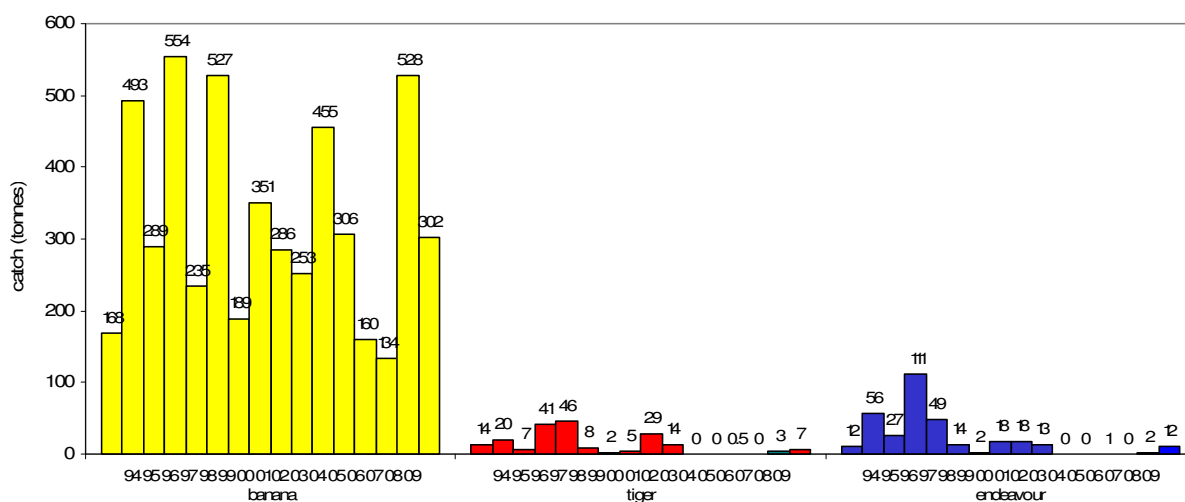


**Figure 49c:** Catch rate for the tiger prawn fishery in the Port Essington area between 1994 and 2009.

## Melville

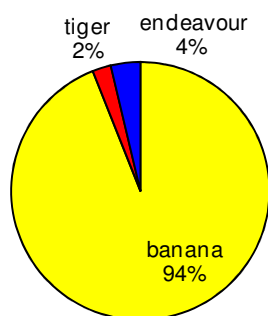
Banana prawn catches in the Melville area decreased from 528 t in 2008 to 302 t in 2009. Catches of tiger and endeavour prawns were 7 t and 12 t in 2009, respectively (Figure 50). Banana prawns comprised 94% of the catch in 2009 (Figure 51).

Effort in the banana fishery decreased from 435 days in 2008 to 208 days in 2009 (Figure 52a). CPUE of banana prawn increased from 1.223 t per day in 2008 to 1.488 t per day in 2009 (Figure 52b). Effort in the tiger prawn fishery increased from 6 days in 2008 to 34 days in 2009 (Figure 52a). Nominal and effective CPUE increased from 0.203 t per day and 0.097 t per day in 2008 to 0.358 t per day and 0.164 t per day, respectively in 2009 (Figure 52c).

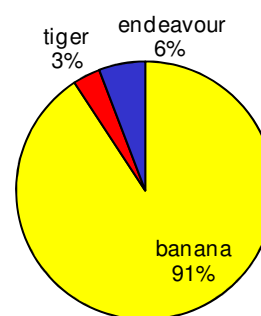


**Figure 50:** Catch by species in the Melville area between 1994 and 2009.

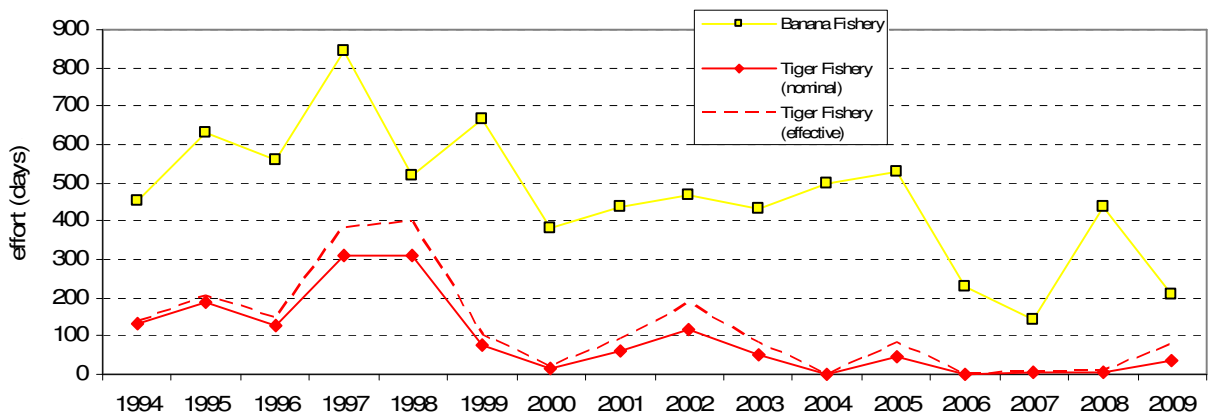
a)



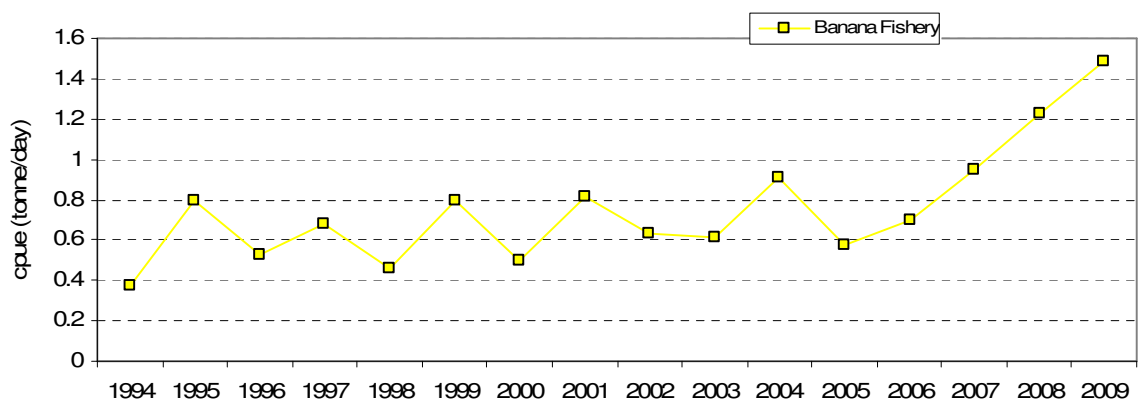
b)



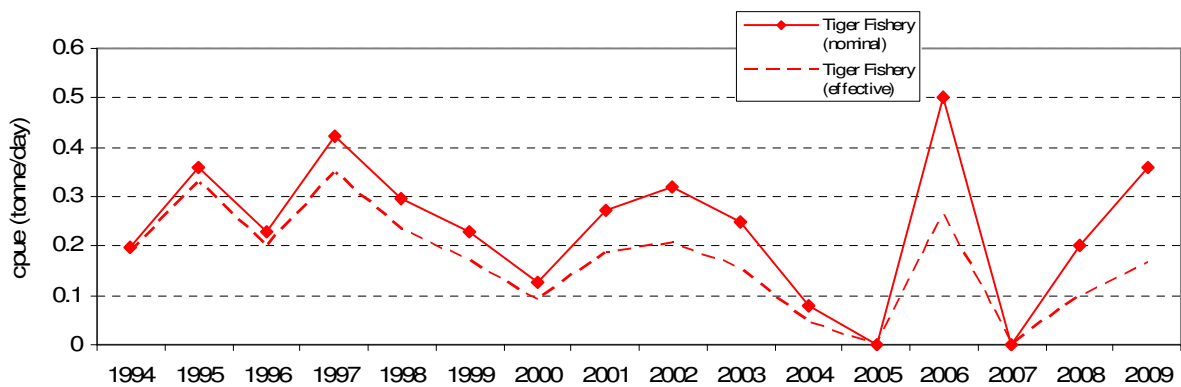
**Figure 51:** Percentage catch of prawn species in the Melville area during 2009 (a) and percentage catch of prawn species in the Melville area from 1994 to 2009 (b).



**Figure 52a:** Effort for the banana and tiger prawn fisheries in the Melville area between 1994 and 2009.



**Figure 52b:** Catch rate for the banana fishery in the Melville area between 1994 and 2009.

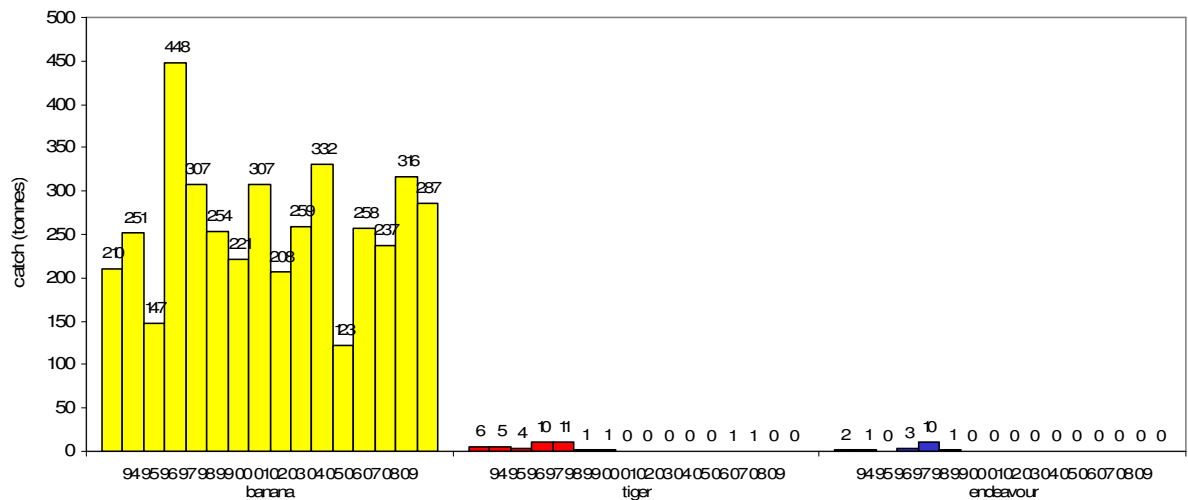


**Figure 52c:** Catch rate for the tiger prawn fishery in the Melville area between 1994 and 2009.

## Fog Bay

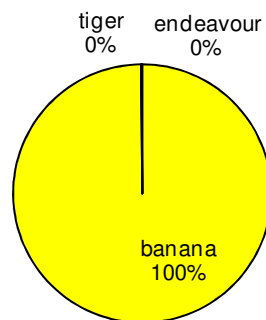
Banana prawn catches in the Fog Bay area decreased from 316 t in 2008 to 287 t in 2009. Catches of tiger and endeavour prawns in 2009 were the less than 1 t (Figure 53). Banana prawns comprised 100% of the catch for 2009 in this area (Figure 54).

Effort in the banana fishery decreased from 200 days in 2008 to 107 days in 2009 (Figure 55a). CPUE of banana prawns increased from 1.580 t per day in 2008 to 2.682 t per day in 2009 (Figure 55b). Effort in the tiger prawn fishery in 2009 remained at 1 day, the same as 2008 (Figure 55a). Nominal and effective CPUE decreased from 0.494 t per day and 0.238 t per day in 2008 to 0.225 t per day and 0.103 t per day in 2009, respectively (Figure 55c).

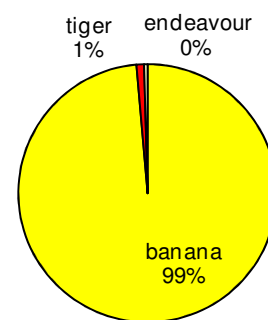


**Figure 53:** Catch by species in the Fog Bay area between 1994 and 2009.

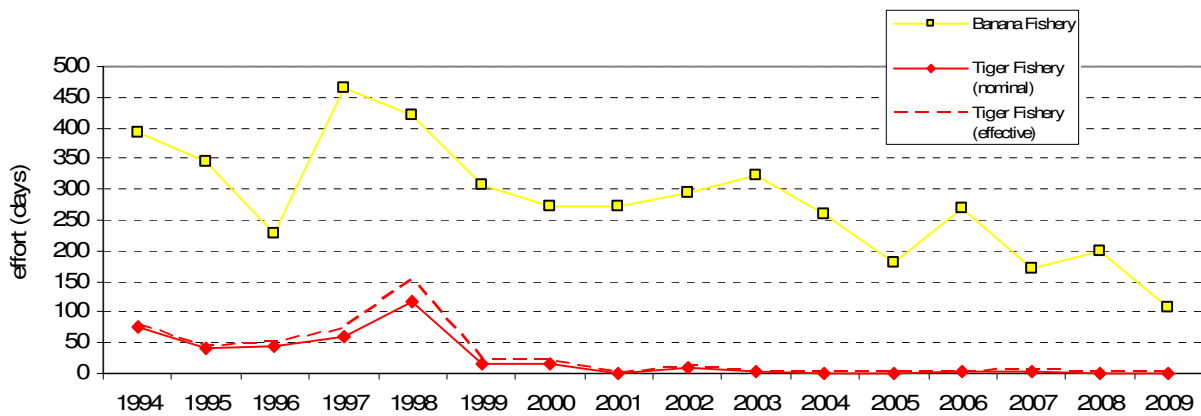
a)



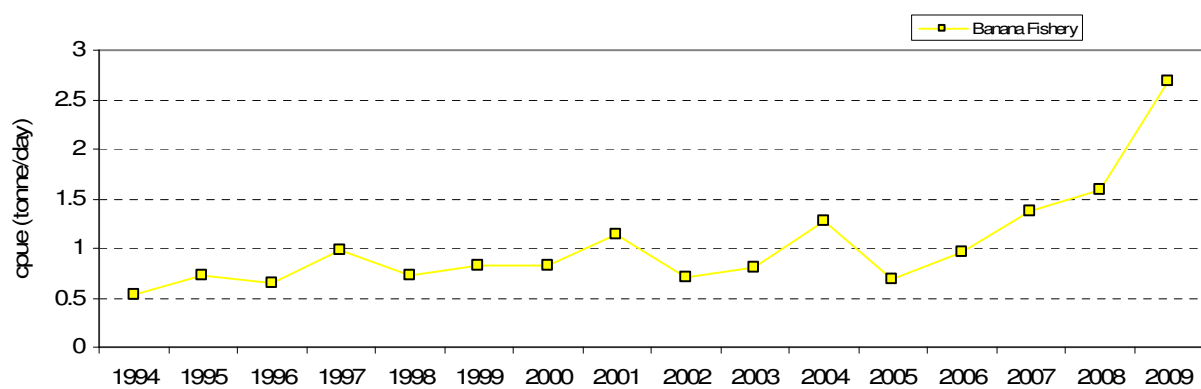
b)



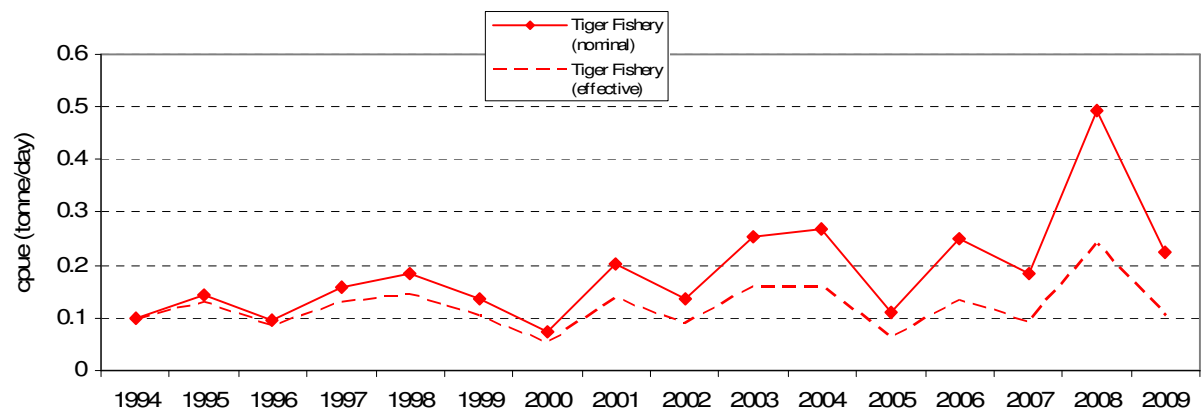
**Figure 54:** Percentage catch of prawn species in the Fog Bay area during 2009 (a) and percentage catch of prawn species in the Fog Bay area from 1994 to 2009 (b).



**Figure 55a:** Effort for the banana and tiger prawn fisheries in the Fog Bay area between 1994 and 2009.



**Figure 55b:** Catch rate for the banana fishery in the Fog Bay area between 1994 and 2009.



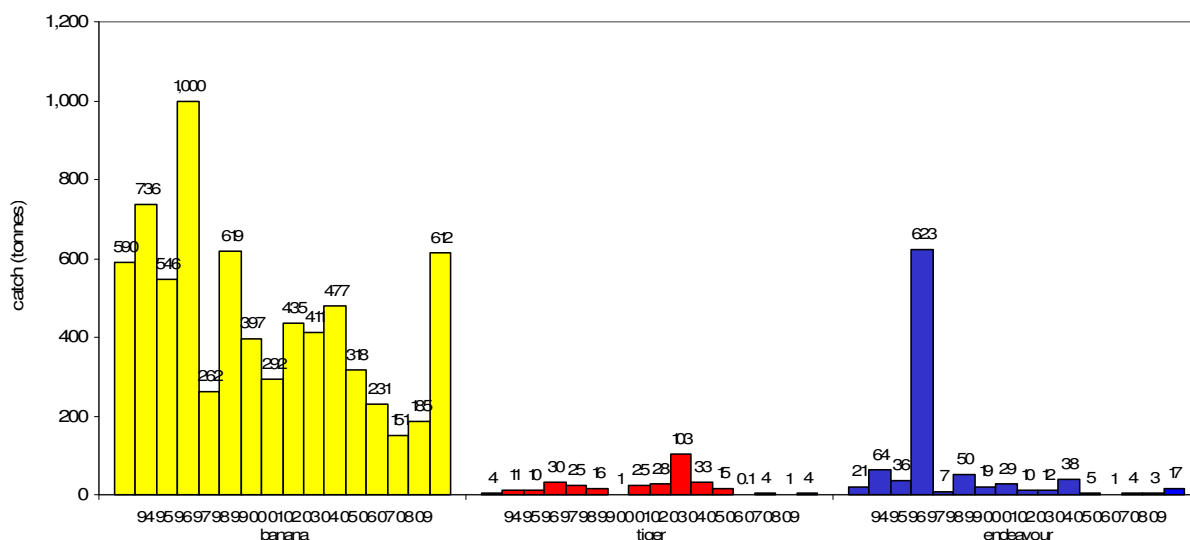
**Figure 55c:** Catch rate for the tiger prawn fishery in the Fog Bay area between 1994 and 2009.



## Bonaparte

Banana prawn catches in the Bonaparte area significantly increased from 185 t in 2008 to 612 t in 2009. Catches of tiger prawns increased from 1 t in 2008 to 4 t in 2009. Catches of endeavour prawns increased from 3 t in 2008 17 t in 2009 (Figure 56). Banana prawns comprised 96% of the catch for 2009 in this area (Figure 57).

Effort in the banana fishery significantly increased from 183 days in 2008 to 444 days in 2009 (Figure 58a). CPUE of banana prawn increased from 1.031 t per day in 2008 to 1.415 t per day in 2009 (Figure 58b). Effort in the tiger prawn fishery increased from 2 days in 2008 to 13 days in 2009 (Figure 58a). Nominal and effective CPUE increased from 0.179 t per day and 0.086 t per day in 2008 to 0.397 t per day and 0.182 t per day, respectively in 2009 (Figure 58c).



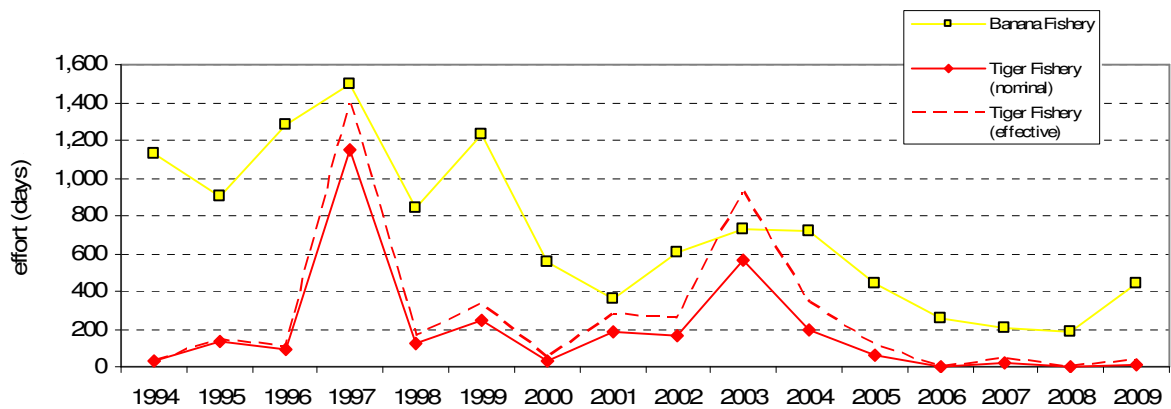
**Figure 56:** Catch by species in the Bonaparte area between 1994 and 2009.

a)

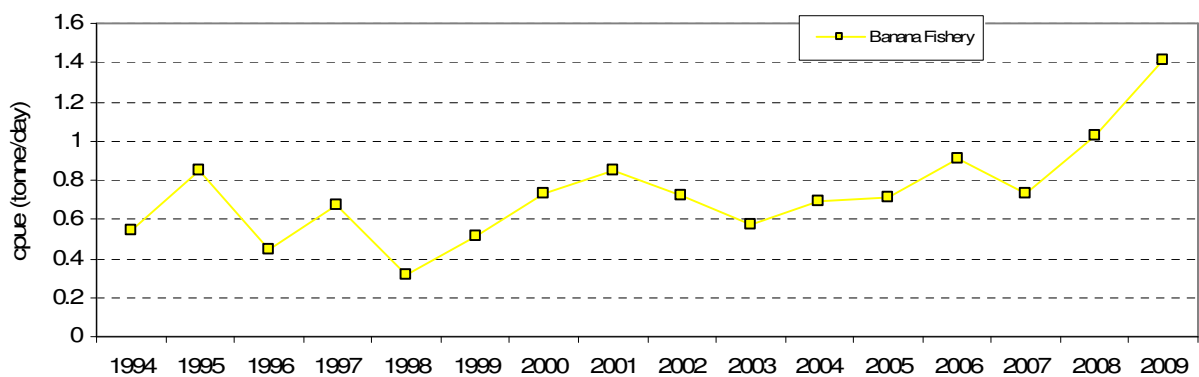
b)



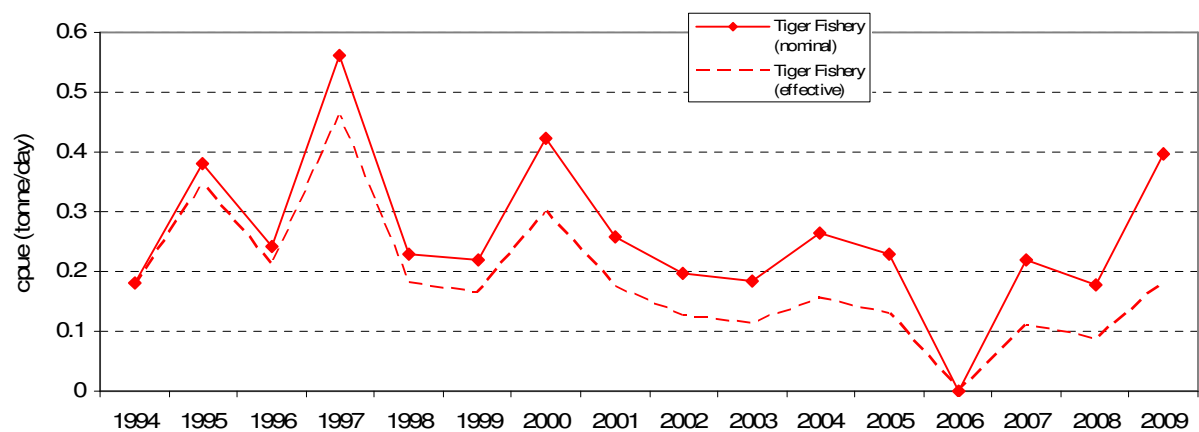
**Figure 57:** Percentage catch of prawn species in the Bonaparte area during 2009 (a) and percentage catch of prawn species in the Bonaparte area from 1994 to 2009 (b).



**Figure 58a:** Effort for the banana and tiger prawn fisheries in the Bonaparte area between 1994 and 2009.



**Figure 58b:** Catch rate for the banana fishery in the Bonaparte area between 1994 and 2009.

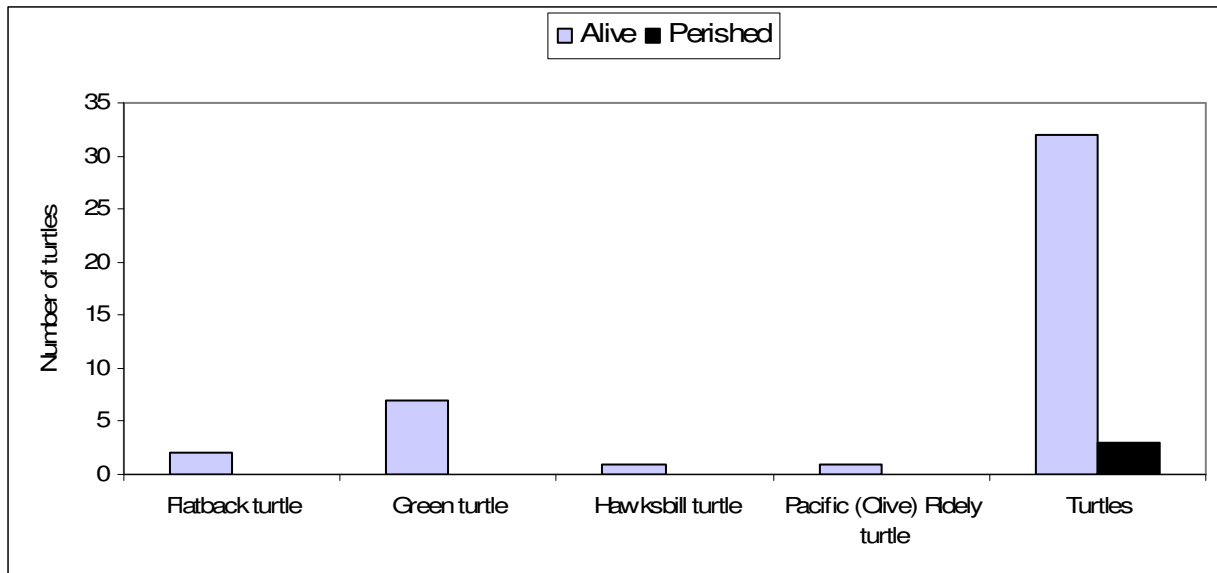


**Figure 58c:** Catch rate for the tiger prawn fishery in the Bonaparte area between 1994 and 2009.

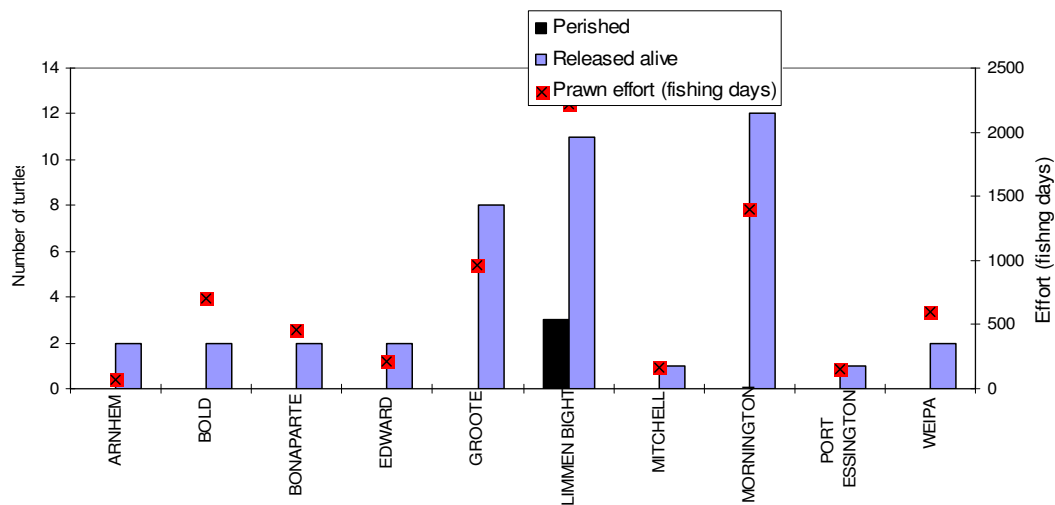
# Bycatch in the Northern Prawn Fishery

## Turtle bycatch

A total of 46 turtles were caught in 2009 (Table 5). Unidentified species comprised most of the turtle bycatch (Figure 60). Turtle bycatch in the NPF was highest in Mornington and Limmen Bight with 12 and 11 turtles caught, respectively. A total of 93% of turtles recorded were released alive (Figure 59).



**Figure 59:** Turtle bycatch in the NPF by area in 2009.



**Figure 60:** Turtle bycatch in the NPF by species in 2009.

**Table 5:** Turtle bycatch by species for each area, 2007-2009.

| Statistical Area    | Turtle Species       | Released Alive |    |    | Perished |    |    | Condition Unknown |    |    |
|---------------------|----------------------|----------------|----|----|----------|----|----|-------------------|----|----|
|                     |                      | 07             | 08 | 09 | 07       | 08 | 09 | 07                | 08 | 09 |
| <b>ARNHEM</b>       | Flatback             |                |    |    |          |    |    |                   |    |    |
|                     | Green                |                |    | 1  |          |    |    |                   |    |    |
|                     | Hawksbill            |                |    | 1  |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |
|                     | Loggerhead           |                | 1  |    |          |    |    |                   |    |    |
|                     | Pacific Ridley       |                |    |    |          |    |    |                   |    |    |
| <b>BOLD</b>         | Unidentified species | 1              | 2  |    |          |    |    |                   |    |    |
|                     | Flatback             |                | 4  | 1  |          |    |    |                   |    |    |
|                     | Green                |                |    |    |          |    |    |                   |    |    |
|                     | Hawksbill            |                | 1  |    |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |
|                     | Loggerhead           |                |    |    |          |    |    |                   |    |    |
| <b>BONAPARTE</b>    | Pacific Ridley       |                |    |    |          |    |    |                   |    |    |
|                     | Unidentified species |                |    | 1  |          |    |    |                   |    |    |
|                     | Flatback             |                |    |    |          |    |    |                   |    |    |
|                     | Green                |                |    |    |          |    |    |                   |    |    |
|                     | Hawksbill            |                |    |    |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |
| <b>EDWARD</b>       | Loggerhead           |                |    |    |          |    |    |                   |    |    |
|                     | Pacific Ridley       |                |    |    |          |    |    |                   |    |    |
|                     | Unidentified species |                |    | 2  |          |    |    |                   |    |    |
|                     | Flatback             |                |    |    |          |    |    |                   |    |    |
|                     | Green                | 1              |    |    |          |    |    |                   |    |    |
|                     | Hawksbill            |                |    |    |          |    |    |                   |    |    |
| <b>FOG BAY</b>      | Leatherback          |                |    |    |          |    |    |                   |    |    |
|                     | Loggerhead           |                |    |    |          |    |    |                   |    |    |
|                     | Pacific Ridley       |                |    |    |          |    |    |                   |    |    |
|                     | Unidentified species |                | 1  | 2  |          |    |    |                   |    |    |
|                     | Flatback             |                |    |    |          |    |    |                   |    |    |
|                     | Green                | 2              |    |    |          |    |    |                   |    |    |
| <b>GOVE</b>         | Hawksbill            |                |    |    |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |
|                     | Loggerhead           |                |    |    |          |    |    |                   |    |    |
|                     | Pacific Ridley       | 2              |    |    |          |    |    |                   |    |    |
|                     | Unidentified species | 1              | 2  |    |          |    |    |                   |    |    |
|                     | Flatback             |                |    |    |          |    |    |                   |    |    |
| <b>GROOTE</b>       | Green                | 8              |    |    |          |    |    |                   |    |    |
|                     | Hawksbill            | 1              |    | 1  |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |
|                     | Loggerhead           |                |    |    |          |    |    |                   |    |    |
|                     | Pacific Ridley       | 3              |    |    |          |    |    |                   |    |    |
|                     | Unidentified species | 3              | 1  | 7  |          |    |    |                   |    |    |
| <b>LIMMEN BIGHT</b> | Flatback             |                | 1  | 1  |          |    |    |                   |    |    |
|                     | Green                |                |    | 1  |          |    |    |                   |    |    |
|                     | Hawksbill            |                | 1  |    |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |
|                     | Loggerhead           | 1              |    |    |          |    |    |                   |    |    |
|                     | Pacific Ridley       |                |    |    |          |    |    |                   |    |    |
| <b>MELVILLE</b>     | Unidentified species | 2              |    | 9  |          |    | 3  |                   |    |    |
|                     | Flatback             |                |    |    |          |    |    |                   |    |    |
|                     | Green                |                |    |    |          |    |    |                   |    |    |
|                     | Hawksbill            |                |    |    |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |
|                     | Loggerhead           |                |    |    |          |    |    |                   |    |    |
| <b>MITCHELL</b>     | Pacific Ridley       |                |    |    |          |    |    |                   |    |    |
|                     | Unidentified species | 7              |    |    |          | 1  |    |                   |    |    |
|                     | Flatback             |                |    |    |          |    |    |                   |    |    |
|                     | Green                |                |    |    |          |    |    |                   |    |    |
|                     | Hawksbill            |                |    |    |          |    |    |                   |    |    |
|                     | Leatherback          |                |    |    |          |    |    |                   |    |    |

|                        |                             |    |    |    |     |
|------------------------|-----------------------------|----|----|----|-----|
|                        | Loggerhead                  |    |    |    |     |
|                        | Pacific Ridley              |    |    |    |     |
|                        | Unidentified species        | 1  | 1  |    |     |
| <b>MORNINGTON</b>      | Flatback                    |    |    |    |     |
|                        | Green                       |    | 4  |    |     |
|                        | Hawksbill                   |    |    |    |     |
|                        | Leatherback                 |    |    |    |     |
|                        | Loggerhead                  | 1  |    |    |     |
|                        | Pacific Ridley              | 1  | 2  | 1  |     |
|                        | Unidentified species        | 1  |    | 7  |     |
| <b>PORT ESSINGTON</b>  | Flatback                    |    |    |    |     |
|                        | Green                       |    |    |    |     |
|                        | Hawksbill                   |    |    |    |     |
|                        | Leatherback                 |    |    |    |     |
|                        | Loggerhead                  |    |    |    |     |
|                        | Pacific Ridley              |    | 1  |    |     |
|                        | Unidentified species        | 2  | 1  | 1  |     |
| <b>SWEERS</b>          | Flatback                    |    | 2  |    |     |
|                        | Green                       |    |    |    |     |
|                        | Hawksbill                   |    |    |    |     |
|                        | Leatherback                 |    |    |    |     |
|                        | Loggerhead                  |    |    |    |     |
|                        | Pacific Ridley              |    |    |    |     |
|                        | Unidentified species        |    |    |    |     |
| <b>WEIPA</b>           | Flatback                    |    | 1  |    |     |
|                        | Green                       | 3  |    |    |     |
|                        | Hawksbill                   |    |    |    |     |
|                        | Leatherback                 |    |    |    |     |
|                        | Loggerhead                  |    |    |    |     |
|                        | Pacific Ridley              |    |    |    |     |
|                        | Unidentified species        | 14 | 3  | 2  |     |
| <b>TOTAL ALL AREAS</b> | <b>Flatback</b>             | 10 | 8  | 2  |     |
|                        | <b>Green</b>                | 7  |    | 7  |     |
|                        | <b>Hawksbill</b>            |    | 2  | 1  |     |
|                        | <b>Leatherback</b>          |    |    |    |     |
|                        | <b>Loggerhead</b>           | 1  | 2  | 0  |     |
|                        | <b>Pacific Ridley</b>       | 6  | 3  | 1  |     |
|                        | <b>Unidentified species</b> | 31 | 11 | 32 | 1 3 |
| <b>GRAND TOTAL</b>     | <b>ALL SPECIES</b>          | 55 | 26 | 43 | 1 3 |

## Sea snake bycatch

A total of 7,315 sea snakes were caught during 2009. The majority of sea snakes (6,343 individuals representing 87% of the total) were released alive, 648 (9%) perished, 243 (3%) released with their condition unknown and 89 (1%) sea snakes released injured (Table 6). Sea snake bycatch was highest in Limmen Bight (2,145 individuals) and lowest in Arnhem (27) and Fog Bay (27). In 2009, there was a 23% increase in the total number of sea snakes taken, however total mortality decreased by 8% compared to 2008.

**Table 6:** Sea snake bycatch by area in the NPF for 2009.

| Statistical area | Released alive | Perished | Released injured | Condition unknown | Total |
|------------------|----------------|----------|------------------|-------------------|-------|
| ARNHEM           | 23             | 4        |                  |                   | 27    |
| BOLD             | 713            | 96       | 24               | 2                 | 835   |
| BONAPARTE        | 169            | 26       | 4                | 1                 | 200   |
| EDWARD           | 126            | 9        | 6                | 9                 | 150   |
| FOG BAY          | 27             |          |                  |                   | 27    |
| GOVE             | 127            | 18       | 2                | 14                | 161   |
| GROOTE           | 1,030          | 105      | 5                | 49                | 1,189 |
| KEERWEER         | 92             | 4        | 2                | 4                 | 102   |
| LIMMEN BIGHT     | 1,879          | 193      | 22               | 51                | 2,145 |
| MELVILLE         | 88             | 21       | 3                | 7                 | 119   |
| MITCHELL         | 118            | 5        | 1                | 10                | 134   |
| MORNINGTON       | 1,281          | 106      | 16               | 18                | 1,421 |
| PORT ESSINGTON   | 78             | 16       |                  |                   | 94    |
| SWEERS           | 59             | 10       | 1                | 1                 | 71    |
| WEIPA            | 533            | 35       | 3                | 69                | 640   |

## Scampi Catch

Due to data confidentiality requirements scampi catch cannot be disclosed.

## Scientific Observer and Crew Member Observer coverage

Comparison of CMO, Scientific Observer and logbook recorded interactions with Threatened Endangered and Protected (TEP) species is detailed in Tables 7 and 8. Recorded interactions with sea snakes, turtles and sawfish per boat day were lowest from Scientific Observer data (Table 8). Recorded interactions per boat day for sea snakes, turtles and sawfish were highest from Crew Member Observer data, whilst interactions with syngnathids per boat day were highest from Scientific Observer data (Table 8).

In 2009, the number of fishing days observed from logbook returns (7,984 days) and scientific observers (144 days) remained similar to 2008 at 7,903 days and 141 days, respectively. However, the number of fishing days observed by CMOs significantly increased to 397 days in 2009 compared to 120 days in 2008.

**Table 7:** Comparison of TEP species interactions reported by Scientific Observers, CMOs and in logbooks in the NPF during the 2009 tiger prawn season.

|                               | Vessel Returns | Fishing Days* | Total Sea Snakes | Total Turtles | Total Syngnathids | Total Sawfish |
|-------------------------------|----------------|---------------|------------------|---------------|-------------------|---------------|
| <b>Logbook Returns</b>        | 55             | 7,984         | 7,315            | 46            | 8                 | 318           |
| <b>Crew Member Observers</b>  | 5              | 397           | 638              | 27            | 27                | 73            |
| <b>Scientific Observers**</b> | 5              | 144           | 114              | 0             | 15                | 3             |

\*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 2009 tiger prawn season.

|                              | Sea Snakes per Fishing Day | Turtles per Fishing Day | Syngnathids per Fishing Day | Sawfish per Fishing Day |
|------------------------------|----------------------------|-------------------------|-----------------------------|-------------------------|
| <b>Logbook Returns</b>       | 0.916                      | 0.006                   | 0.001                       | 0.040                   |
| <b>Crew Member Observers</b> | 1.607                      | 0.068                   | 0.068                       | 0.184                   |
| <b>Scientific Observers*</b> | 0.792                      | 0                       | 0.104                       | 0.021                   |

\*Scientific observer results include data collected during gear trials.

## State/Territory specific data

Queensland recorded an increase in total prawn catch, increasing from 3,866 t in 2007/08 to 4,207 t in 2008/09. Total prawn catch in Western Australia also increased, from 160 t in 2007/08 to 291 t in 2008/09. However, total prawn catch in the Northern Territory decreased, from 2,826 t in 2007/08 to 2,217 t in 2008/09.

Banana prawn catch increased in Queensland in 2008/09 to 3,917 t compared to 3,578 t in 2007/08. Banana prawn catch also increased in Western Australia in 2008/09 to 287 t compared to 151 t in 2007/08. However, banana prawn catch in the Northern Territory decreased from 1,550 t in 2007/08 to 1,288 t in 2008/09 (Table 9).

Tiger prawn and endeavour prawn catch both increased in Queensland but decreased in the Northern Territory and Western Australia. The catch of king prawns taken in Queensland, Western Australia and the Northern Territory was less than one tonne. (Table 9).

**Table 9:** Prawn catch by State/Territory from 1990/91 to 2008/09 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> |
|-------------------|-----------------------|-------------------|------------------|----------------------|-----------------|------------------------|
| <b>Queensland</b> | 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 | 3,917 | 202   | 88  | 0  | 4,207 |
| <b>Northern Territory</b> | 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 | 1,288 | 809   | 121 | 0  | 2,217 |
| <b>Western Australia</b>  | 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   |
|                           | 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 | 287   | 1     | 3   | 0  | 291   |

## Byproduct of the NPF by State/Territory

Total byproduct retained in the NPF State/Territory in 2009 was 37,318 kg, with Northern Territory retaining the highest and WA retaining the lowest byproduct. Moreton bay bugs comprised most of the byproduct, with 11,412 kg of being retained. Other bugs, squids and cuttlefish also contributed substantially to retained byproduct (Table 10).



**Table 10:** Retained byproduct of the NPF by State/Territory in 2009.

| Species                                  | NT (kg) | QLD (kg) | WA (kg) | Grand Total (kg) |
|--|---------|----------|---------|------------------|
| Black pomfret                            | 66      | 15       |         | 81               |
| Blue endeavour prawns                    | 2,666   | 701      |         | 3,367            |
| Bugs - Shovel nosed and slipper lobsters | 2,566   | 1,938    | 27      | 4,530            |
| Champagne lobster - Spear lobster        | 2,564   |          |         | 2,564            |
| Commercial scallop                       | 108     |          |         | 108              |
| Cuttlefishes                             | 2,778   | 1515     | 22      | 4,315            |
| Flathead                                 | 72      |          |         | 72               |
| Golden snapper - Fingermark seaperch     | 203     |          |         | 203              |
| Herring                                  |         | 10       |         | 10               |
| Mackerel                                 |         | 43       |         | 43               |
| Mangrove Jack                            | 8       |          |         | 8                |
| Mixed fish                               |         | 122      |         | 122              |
| Moreton Bay bugs                         | 5,544   | 5,855    | 13      | 11,412           |
| Octopuses                                | 48      | 54       |         | 102              |
| Pomfret                                  | 76      |          |         | 76               |
| Saddle-tailed seaperch - Crimson seaperc | 66      |          |         | 66               |
| Scallops                                 | 1,925   | 60       |         | 1,985            |
| Scarlet Sea Perch / Large Mouth Nannygai | 51      |          |         | 51               |
| Squids                                   | 5,210   | 2,570    | 161     | 7,941            |
| Whitings                                 | 190     | 72       |         | 262              |
| Grand Total                              | 24,141  | 12,955   | 223     | 37,318           |