



Northern Prawn Fishery Data Summary 2013

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NPF INDUSTRY PTY LTD on behalf of Australian Fisheries Management Authority
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Preface

Scope of the Report

This document summarises catch and effort information for the Northern Prawn Fishery (NPF) in 2013, including data relating to interactions with Threatened, Endangered and Protected (TEP) species. The data summary provides an important mechanism for providing feedback to stakeholders on logbook data received by AFMA. In addition, the process of data extraction and analysis assists in identifying data quality issues where they exist and also assists in ensuring that data needs for fisheries management continue to be met.

AFMA has produced data summary reports for the NPF on an annual basis since 1999. As part of the AFMA/NPF co-management arrangements in the NPF, this is the sixth year NPF Industry Pty Ltd has been responsible for development of the data summary.

Acknowledgements

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

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Also note that this Data Summary is available on [AFMA's website](http://www.afma.gov.au/managing-our-fisheries/fisheries-a-to-z-index/northern-prawn-fishery/) (www.afma.gov.au/managing-our-fisheries/fisheries-a-to-z-index/northern-prawn-fishery/).

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Introduction

The Northern Prawn Fishery Data Summary 2013 contains catch and effort statistics by prawn species, area, time and fishery. Comprehensive bycatch information is also included for the information of stakeholders and to meet AFMA's obligations under Offshore Constitutional Settlement agreements with Queensland, the Northern Territory and Western Australia. Interactions with Threatened, Endangered and Protected (TEP) species, including turtles and sea snakes are also reported.

Description of the Northern Prawn Fishery

Area of Fishery

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

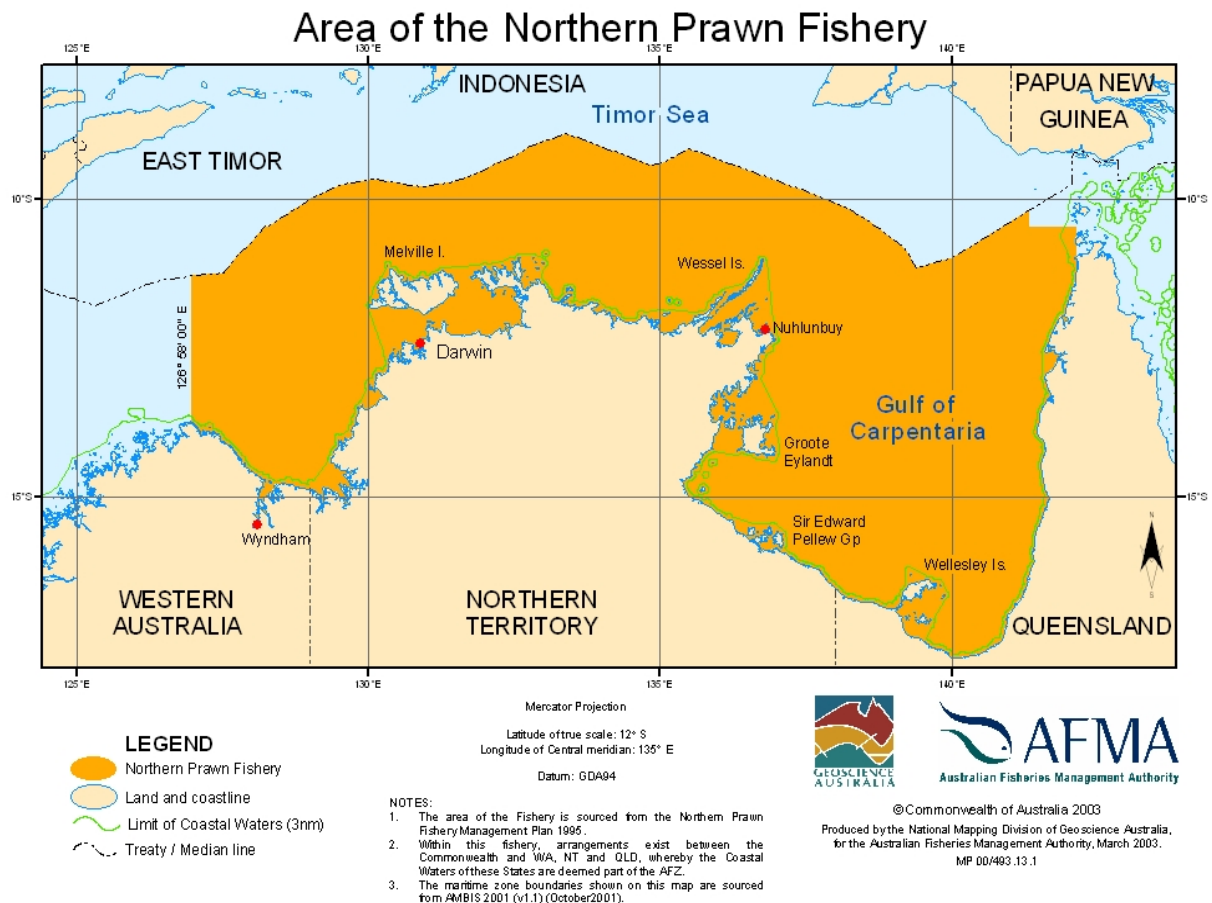


Figure 1: Northern Prawn Fishery Management Area.



Fishing Methods

Prawn trawling is an active fishing method which involves towing a conical-shaped net spread open by two or four steel or timber otter boards over the seabed, commonly called otter trawling. Ground chains are also used on the nets to stimulate prawns into the trawl mouth. Vessels in the NPF may tow a range of nets in a variety of configurations. These are regulated by the *Northern Prawn Fishery Management Plan 1995* (the Management Plan) and relevant Determinations and Directions. In addition to the main nets, a small “try-net” is also used to test the potential catches for a given area. All trawl nets (other than try-nets) in the NPF are required to be fitted with approved Turtle Excluder Devices (TEDs) and Bycatch Reduction Devices (BRDs) (unless fishing in waters deeper than 200m, in which case a TED is not required).

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

Management Information

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

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

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

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

In 2007, the industry formed a company 'NPF Industry Pty Ltd' (NPFi) that incorporates around 95% of the fishery gear SFR holders.

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

In 2009 the length of the tiger prawn season was increased by four weeks based on the outputs of the 2008 tiger prawn stock assessment, resulting in a season commencing 25 July and closing



19 December. This was the first time since the introduction of the mid-year closure in 1987 that the tiger prawn season commenced prior to 1 August.

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

In 2013 as in 2012, the banana season extended from 31 March UTC to 15 June UTC, and the tiger prawn season extended from 01 August UTC to 29 November UTC (though targeting of tiger prawns was permitted from 1 May until 15 June during the banana prawn season). There were 76 days available to fish during the first season and 121 during the second season (a total of 197).

As in 2012, a rule was put in place for the 2013 banana season to trigger closure to banana fishing west of 138°, and prevent daylight trawling east of this location to prevent banana prawn targeting, if average daily catches did not meet a trigger of 500 kg per boat/day during a two week reporting period.

Species

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

Data Collection Program

NPF operators are required to complete the 'Northern and Torres Strait Prawn Fisheries Daily Fishing Log' (NP16), a paper logbook on a daily basis. Alternatively, NPF operators can use an electronic version (e-log). In 2013 approximately 79% (41 operators) during the banana prawn season and 81% (42 operators) during the tiger prawn season used e-logs. Both paper logbook and e-log data is included in this data summary.

Methods Used For Preparing Data Summary

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

The data used in this summary was extracted during April 2014 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 52 vessels. On average logbook catches of banana prawns were underestimated by 0.9% when compared to Seasonal Landing Returns (SLR), with the greatest discrepancy being 14% (one vessel) for the banana prawn season. The tiger prawn catches recorded in the logbooks from 52 vessels were within On



average logbook catches of tiger prawns were underestimated by 0.38% when compared to SLRs, with the greatest discrepancy for a single vessel being 16% 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 SLR figures. The remainder of the tables and figures in the summary represent logbook data only. This may cause discrepancies between totals. Minor discrepancies may also occur due to rounding of values.

Banana and Tiger Prawn Fishery Components

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

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

Catch and Effort Data for the Northern Prawn Fishery

Catch

The total NPF prawn catch for 2013 was 5,802 t compared with 6,601 t in 2012 (Table 1). The catch of banana prawns in 2013 (3,050 t) was below that of the previous year (4,901 t) (Figure 2). The catch of tiger prawns increased by 84%, from 1,203 t in 2012 to 2,215 t in 2013. Catches of endeavour prawns increased by 4.3%, from 487 t in 2012 to 508 t in 2013 (Table 1). Catches of king prawns increased from 11 t in 2012 to 29 t in 2013.

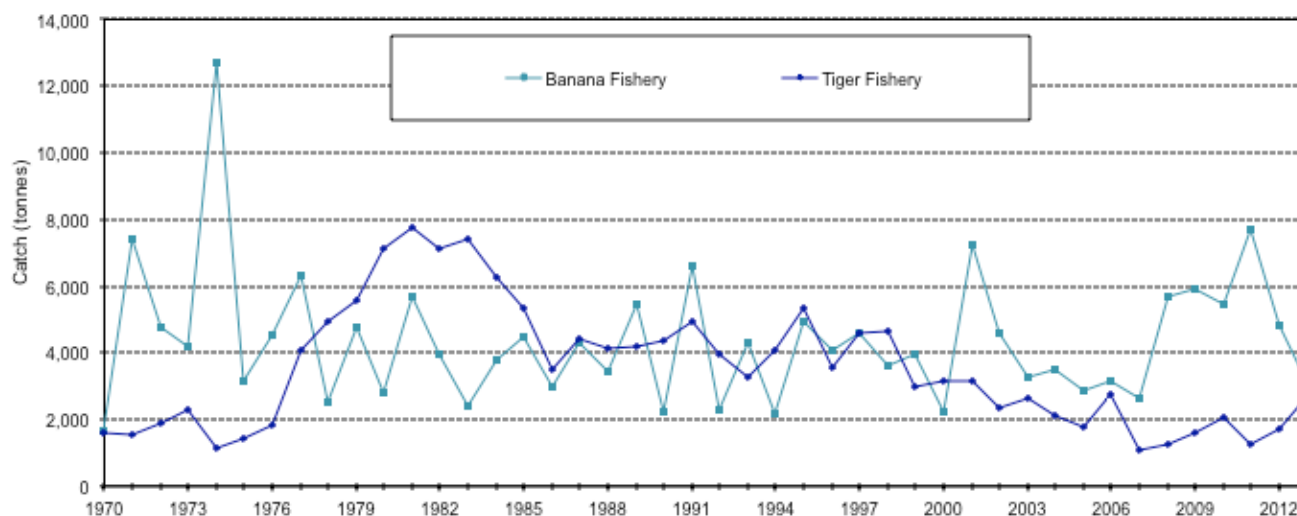


Figure 2: Catch of all prawn species (combined) in the banana and tiger prawn fisheries between 1970 and 2013.

Table 1: Annual reconciled landings, effort and vessel number in the NPF from 1970 to 2013

Year	Banana (t)	Tiger (t)	Endeavour (t)	King (t)	Total Catch (t)	No. of Vessels	Banana Fishery Effort (days)	Tiger Fishery Effort (days)
1970	1,702	1,138	417	0	3,257	191	2,041	5,818
1971	7,364	1,183	400	0	8,948	169	5,571	6,057
1972	4,801	1,380	472	0	6,654	180	4,327	7,380
1973	4,226	1,672	594	0	6,492	217	4,917	7,362
1974	12,711	666	434	4	13,815	196	7,537	3,439
1975	3,160	973	444	6	4,583	107	5,361	6,010
1976	4,519	1,118	675	5	6,319	145	7,238	6,660
1977	6,345	2,900	1,125	28	10,398	193	7,257	11,673
1978	2,535	3,599	1,240	82	7,456	237	5,569	18,749
1979	4,775	4,218	1,213	94	10,300	240	7,328	17,791
1970-'79average	5,214	1,885	701	22	7,822	188	5,715	9,094
1980	2,835	5,124	1,891	111	9,964	269	8,391	30,594
1981	5,672	5,559	2,073	95	13,400	286	11,524	31,895
1982	3,875	4,891	2,124	144	11,036	271	8,751	32,956
1983	2,382	5,751	1,488	207	9,831	254	6,856	34,551
1984	3,770	4,525	1,714	83	10,095	252	5,932	32,447
1985	4,469	3,592	1,671	77	9,811	231	6,946	26,516
1986	2,935	2,682	748	85	6,451	238	7,132	26,669
1987	4,257	3,617	772	65	8,713	234	7,954	22,478
1988	3,381	3,458	669	81	7,591	222	6,655	26,264
1989	5,466	3,173	909	85	9,636	223	7,439	27,036
1980-'89average	3,904	4,237	1,406	103	9,653	248	7,758	29,141
1990	2,221	3,550	735	128	6,636	200	5,044	25,525
1991	6,605	3,987	879	81	11,554	172	6,515	20,744
1992	2,254	3,084	880	47	6,267	170	5,132	21,789
1993	4,292	2,515	733	35	7,572	127	6,299	16,019
1994	2,157	3,162	872	72	6,263	128	4,955	18,592
1995	4,961	4,125	1,150	58	10,294	125	4,880	16,834
1996	4,078	2,311	1,235	41	7,665	127	5,525	16,635
1997	4,587	2,694	1,870	51	9,202	129	5,476	15,385
1998	3,569	3,218	1,322	20	8,123	130	5,301	18,003
1999	3,904	2,136	885	21	6,947	129	5,639	12,675
1990-'99average	3,863	3,078	1,056	55	8,052	144	5,477	18,220
2000	2,195	2,190	958	13	5,335	121	3,697	12,736
2001	7,245	1,983	1,157	4	10,389	118	6,247	10,440
2002	4,577	1,943	411	5	6,936	114	4,148	8,718
2003	3,238	2,222	435	4	5,898	97	4,114	8,503
2004	3,520	1,767	396	3	5,686	96	3,985	7,793
2005	2,901	1,744	281	20	4,946	89	3,364	7,967
2006	3,117	1,802	363	28	5,310	77	3,283	6,983
2007	2,902	1,192	196	20	4,310	51	2,696	4,829
2008	5,816	1,021	213	7	7,058	53	3,347	4,556
2009	5,881	1,250	346	7	7,483	55	3,095	4,889
2000-'09average	4,139	1,711	476	11	6,335	87	3,798	7,741
2010	5,642	1,628	429	12	7,711	52	3,146	4,898
2011	7,141	749	437	8	8,335	55	3,440	4,143
2012	4,901	1,203	487	11	6,601	52	2,526	5,521
2013	3,050	2,215	508	29	5,802	52	2,005	5,908

* Note: Catch data is extracted from SLRs.



Catch by week

Figures 3 (a), (b) and (c) show the catch of banana and tiger prawns by week during 2011, 2012 and 2013. Highest banana prawn catches were recorded in the first week of 2013. Banana prawn catches in 2013 experienced a steady decline through the 11 week season, with the exception of a slight increase in catches during week five.

Catches of tiger prawns were highest during weeks 7 of the 2013 tiger season, at 169.7 t.

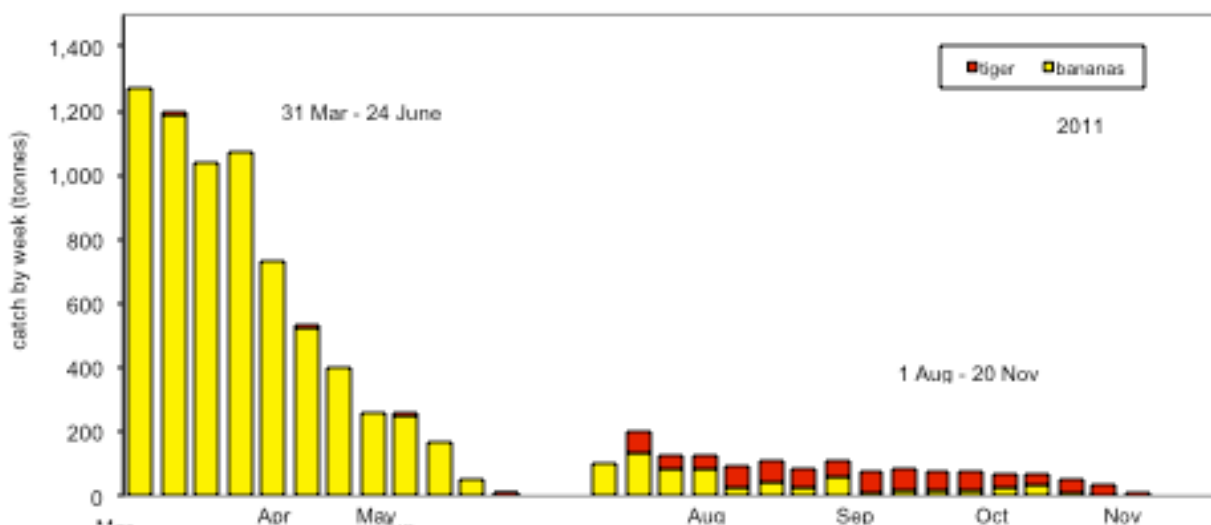


Figure 3a: Weekly catches of banana and tiger prawns (t) in the NPF in 2011.

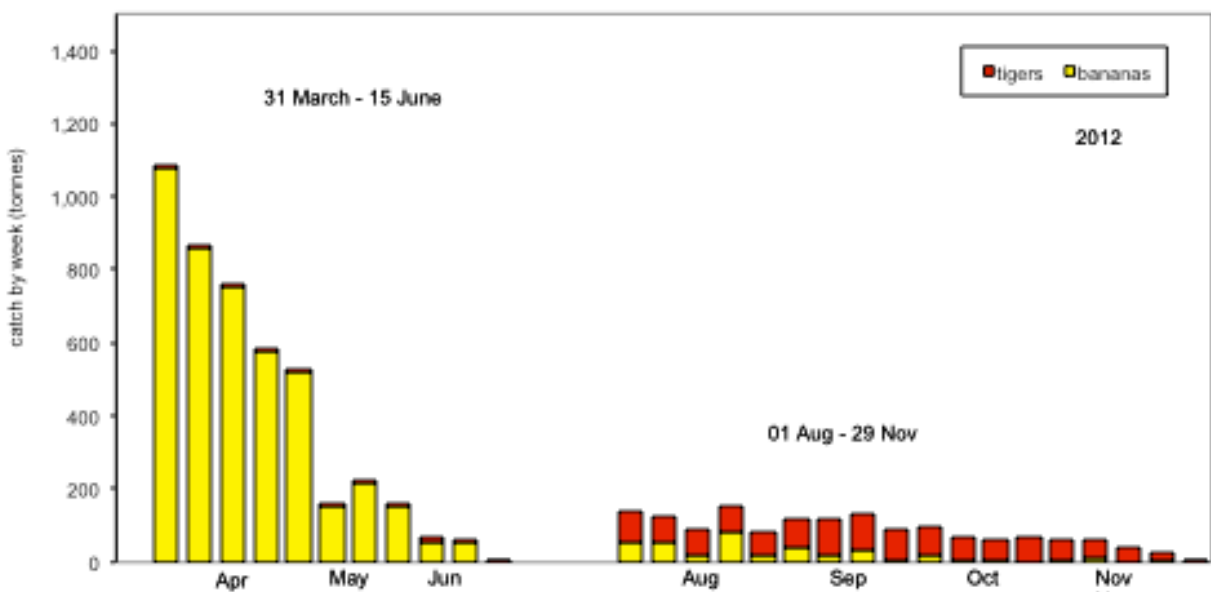


Figure 3b: Weekly catches of banana and tiger prawns (t) in the NPF in 2012.

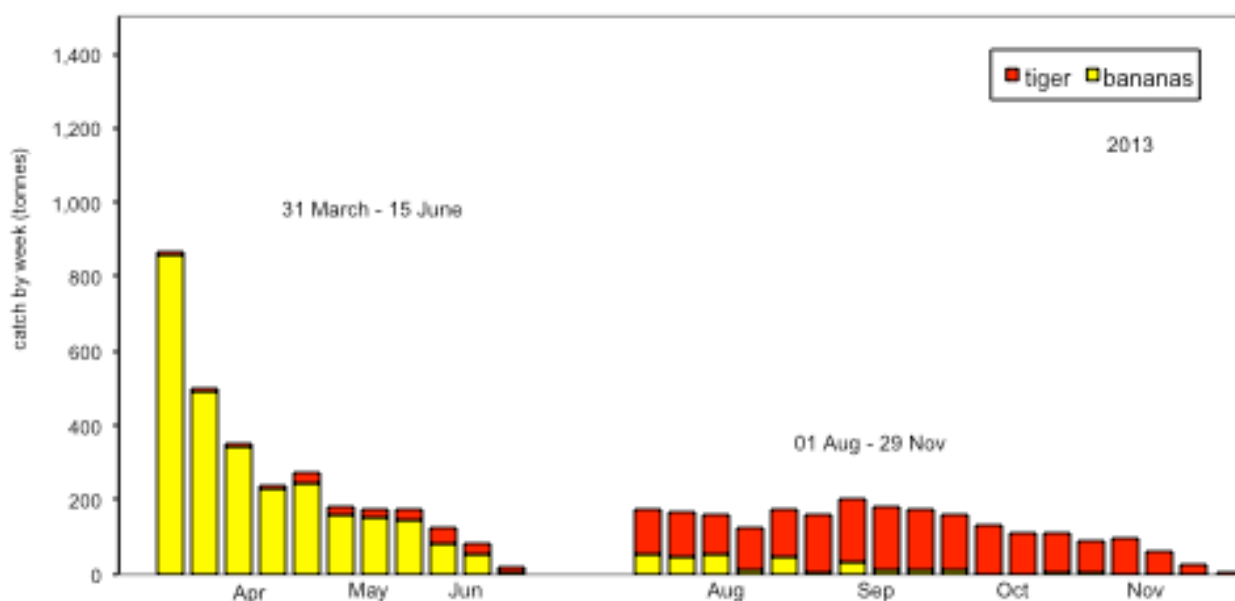


Figure 3c: Weekly catches of banana and tiger prawns (t) in the NPF in 2013.

Effort

Nominal and effective effort

Nominal effort is the number of days recorded by skippers in their logbooks. Effective effort applies only to the tiger prawn fishery and is based on the assumption that there has been an 'effort creep' (an increase in effectiveness of the gear utilised and fishing operations). A number of different approaches are being used by the Northern Prawn Fishery Resource Assessment Group (NPRAG) to account for effort creep, including using an average 5% per year as well as variable effort creep. As in previous years, for the purpose of preparing this report we have used 5%. Nominal effort in the banana prawn fishery decreased by 521 days (26%) in 2013 compared to 2012. In the tiger prawn fishery, nominal effort increased by 687 days (12%) in 2013 compared to 2012. Effective effort in the tiger prawn fishery increased by 2,482 days (16%) compared to 2012.

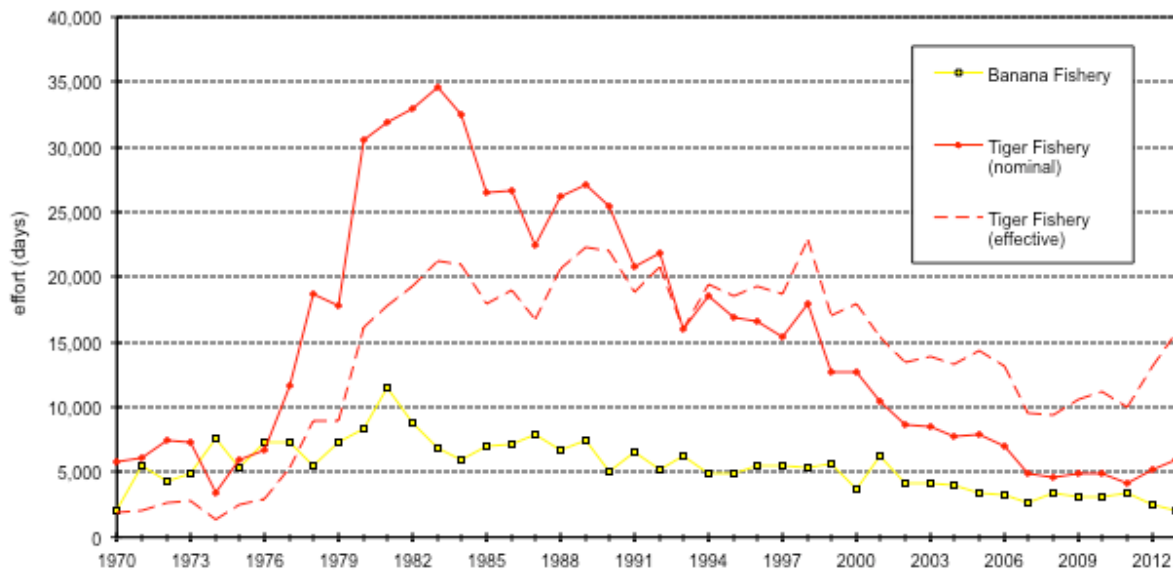


Figure 4: Effort in the banana and tiger prawn fisheries in the NPF between 1970 and 2013.

Catch rate

It is worth noting that there have been a number of changes to headrope length implemented in the NPF over time. A reduction in headrope length of 25% came into effect at the start of the first season in 2005. In 2008 an 8% increase in headrope length was implemented in the tiger prawn season. And more recently, in 2011 the value of gear Statutory Fishing Rights was increased to 9cm for twin gear and 8.1 cm for quad, triple and twin tongue gear in response to the 2011 stock assessment which recommended an increase in the level of effort in the fishery. It is important to note that these changes may have impacted on “catch rate”, measured in terms of Catch per Unit Effort (CPUE), being tonnes per day. It is also important to note that trends in CPUE don’t necessarily reflect trends in stock abundance.

The banana prawn fishery CPUE decreased from a daily rate of 1.909 t per day in 2012 to 1.543 t per day in 2013. The nominal CPUE for the tiger prawn fishery increased from 0.325 t per day in 2012 to 0.457 t per day in 2013, while the effective CPUE increased from 0.128 t per day in 2012 to 0.172 t per day in 2013 (Figure 5).

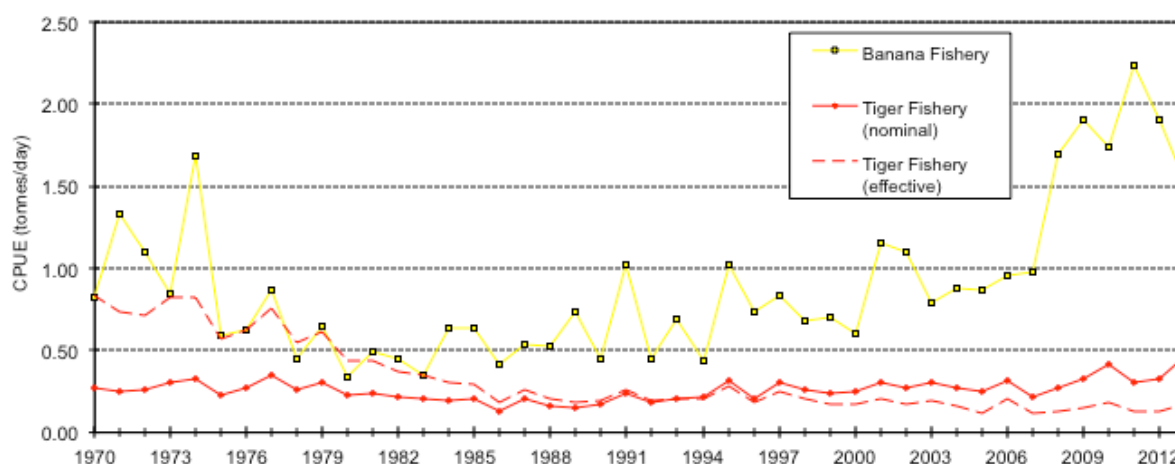


Figure 5: Combined catch rate of banana, endeavour, tiger and king prawns during the banana and tiger prawn fisheries between 1970 and 2013.

Catch, effort and catch rate by month

The highest total prawn catches during the 2013 banana prawn season were obtained during April, whilst the highest total prawn catches during the 2013 tiger prawn season were obtained during August (Table 2).

Table 3 shows effort by month in the banana and tiger prawn seasons for 2013. Effort for 2013 in the banana prawn season was highest in May and lowest in June. Tiger prawn season effort was highest in October and lowest in November (Table 3).

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

Table 2: Monthly catch by species in 2013.

Catch (t)	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Grand Total
Banana	2,008.695	680.875	79.006	0.134	215.097	80.474	22.997	3.283	3,090.561
Tiger	15.096	133.668	49.722		501.256	681.707	556.542	267.628	2,205.619
Endeavour	0.242	8.376	4.273		214.060	80.597	112.739	74.223	494.510
King	0.005	0.580	0.530		2.835	0.308	0.136	0.140	4.534
Total	2,024	823	134	0	933	843	692	345	5,795

Table 3: Monthly effort in the banana and tiger prawn seasons in 2013.

Effort (days)	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Grand Total
Banana Fishery	1,002	603	68	1	172	69	18	14	39	1,986
Tiger Fishery (nominal)	25	320	174		1,351	1,395	1,501	1,142		5,908
Tiger Fishery (effective)	66	849	462		3,585	3,701	3,983	3,030		15,676
Total	1,093	1,772	704	1	5,108	5,165	5,502	4,186	39	23,570

Table 4: Monthly catch rate for all species in the banana and tiger prawn seasons in 2013.

CPUE (t/day)	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Banana Fishery	2.008	1.138	1.153	0.134	1.256	1.158	1.011	0.214	0.000
Tiger Fishery (nominal)	0.491	0.430	0.317		0.531	0.547	0.449	0.300	0.000
Tiger Fishery (effective)	0.185	0.162	0.119		0.200	0.206	0.169	0.113	0.000

Vessel and gear information

Vessel length

A total of 52 different vessels fished in the NPF during 2013. As in 2012, the most common NPF vessel length in 2013 was between 22.0-22.9 m (Figure 6).

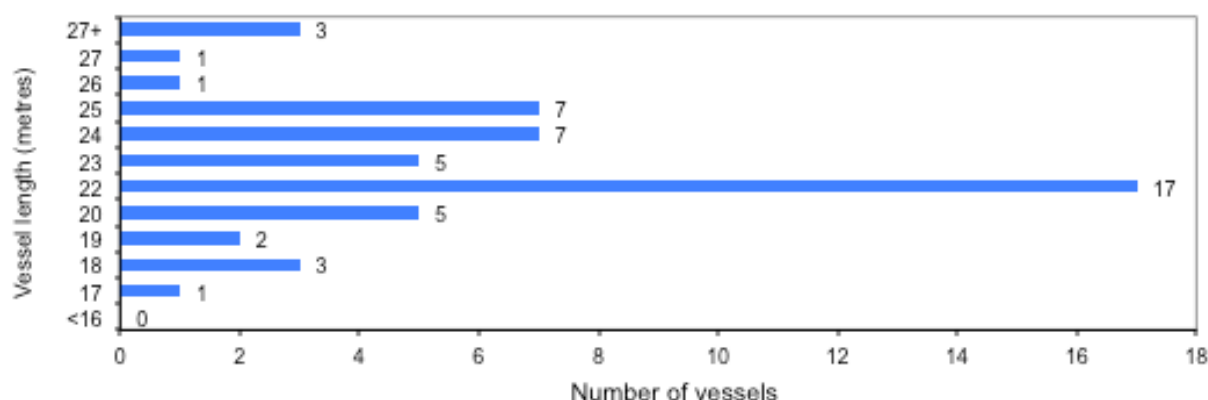


Figure 6: Frequency of vessel lengths in the NPF fleet in 2013.

Distribution of catch by vessel

Modest catches were reported by many NPF fishers during the 2013 banana season. 25 vessels (48%) catching 20-29t, and 8 (15%) catching >60t (Figure 7a).

Improved catches were reported for the 2013 tiger season, with 18 vessels (34.6%) reporting catches of 60t or more, 13 (25%) reporting catches of 50-59t, and 14 vessels (27%) reporting catches of 40-49t (Figure 7b).

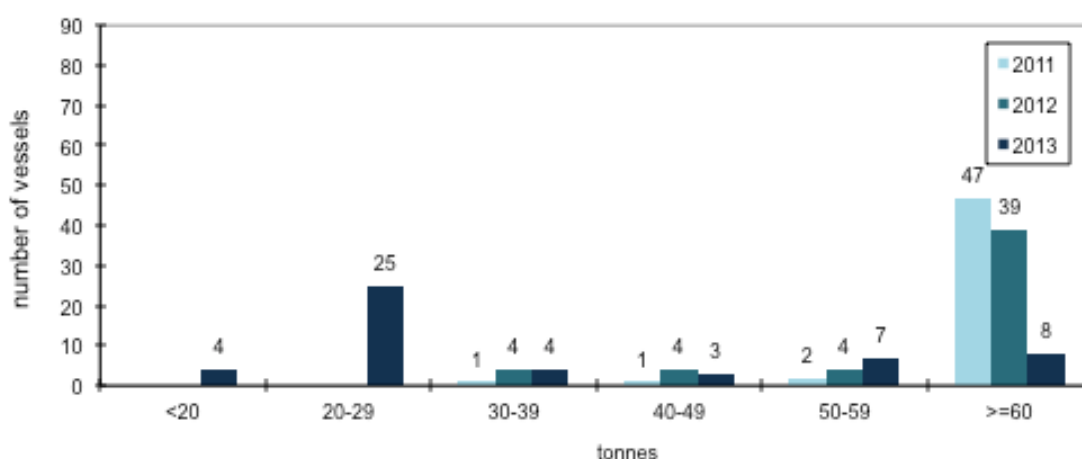


Figure 7a: Distribution of total catch in the banana prawn season, 2011-2013.

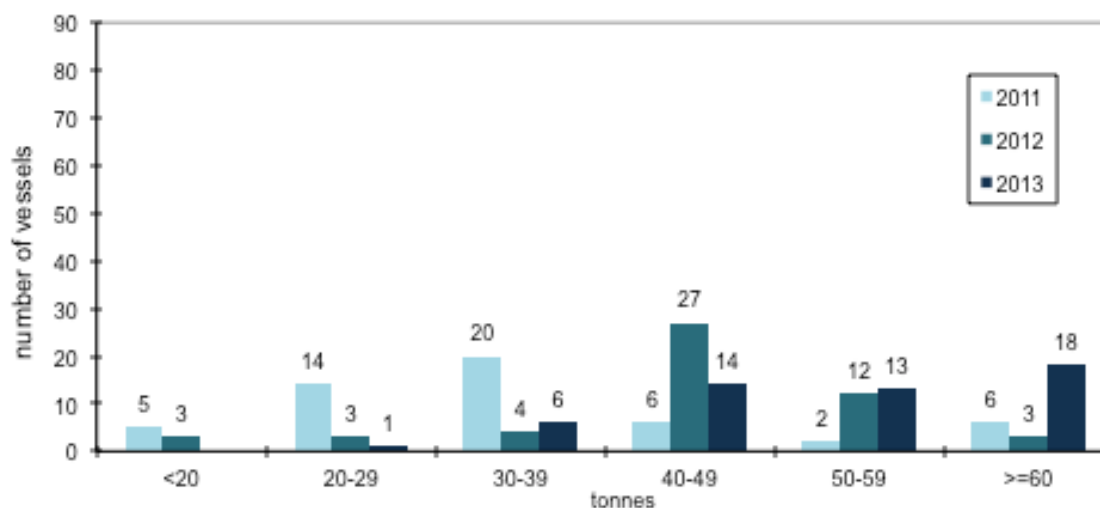


Figure 7b: Distribution of total catch in the tiger prawn season, 2011-2013.

Average catch per vessel

Average total prawn catch per vessel decreased in 2013 from 124 t in 2012 to 111 t per vessel in 2013 (Figure 8a). The average catch per vessel for banana prawns decreased from 92 t in 2012 to 59 t in 2013 (Figure 8b). Conversely, average catch of tiger prawns per vessel increased from 23 t in 2012 to 42 t per vessel in 2013 (Figure 8c).

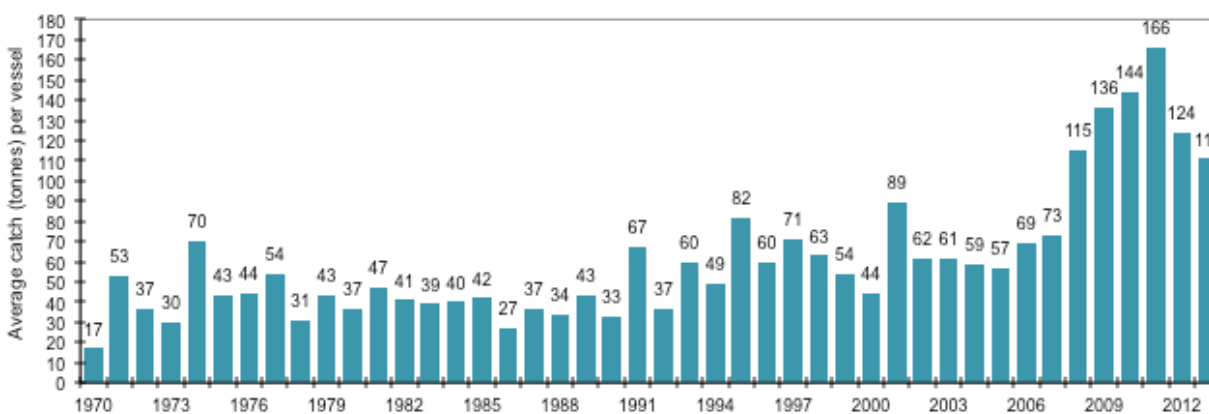


Figure 8a: Average total catch of all prawns per vessel in the NPF from 1970 to 2013.

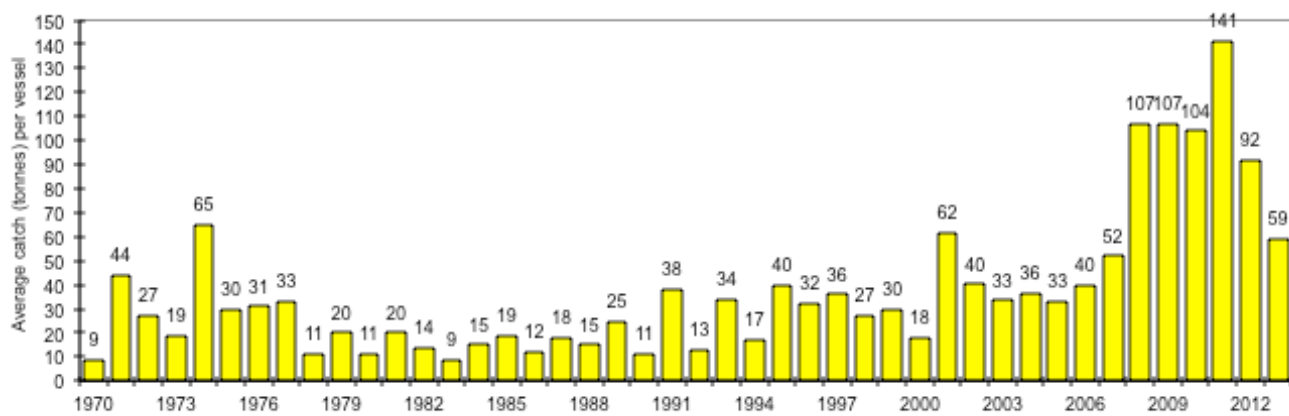


Figure 8b: Average total catch of banana prawns per vessel in the NPF from 1970 to 2013.

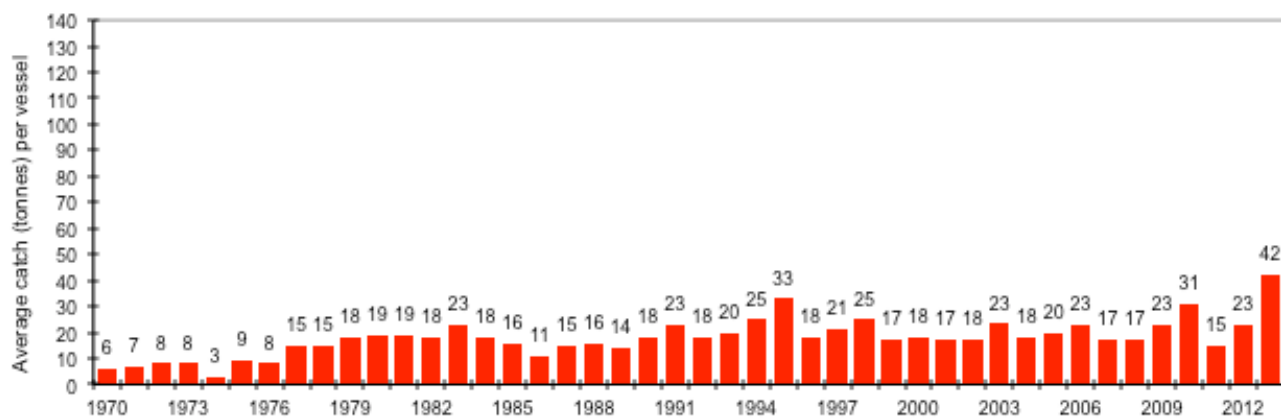


Figure 8c: Average total catch of tiger prawns per vessel in the NPF from 1970 to 2013.

Fishing Gear

Total tiger prawn headrope in 2013 stayed similar at 1,507 fathoms (2.76 km) in 2013 compared to 1,490 fathoms (2.73 km) in 2012 (Figure 9). The mean headrope length in 2013 was 28.44 fathoms (52.01 m) compared with 28.12 fathoms (51.42 m) in 2012 (Figure 10).

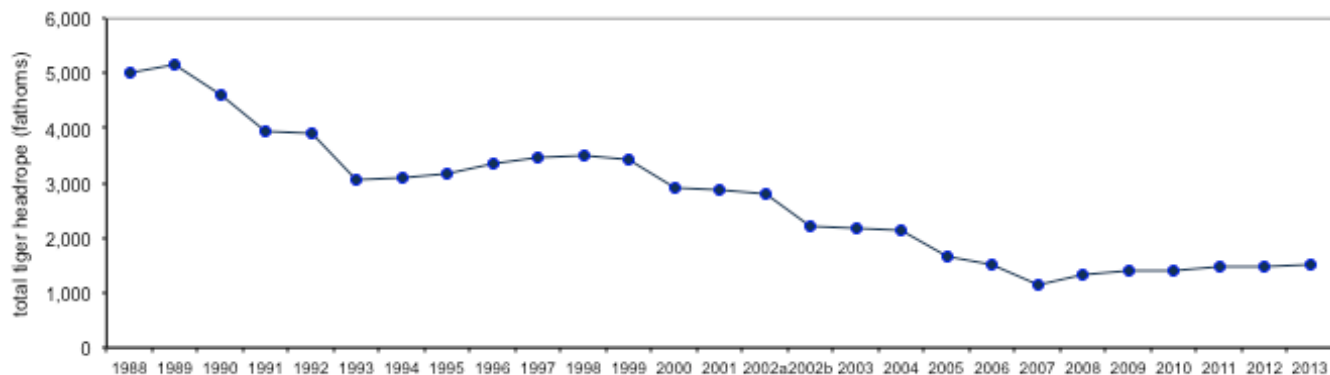


Figure 9: Total tiger prawn season headrope length in the NPF from 1988 to 2013.

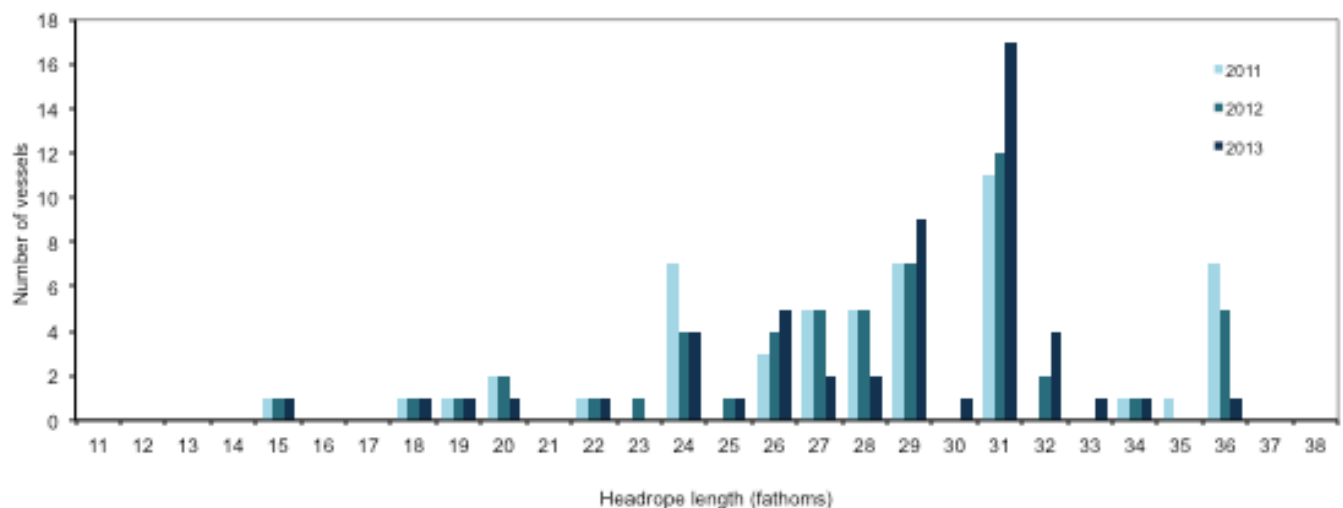


Figure 10: Frequency of headrope length for the tiger prawn season in the NPF from 2011 to 2013.

Catch and effort by statistical area in the Northern Prawn Fishery

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 Mitchell area with 566 t (Figure 12). The highest catches of tiger prawns were recorded in the Groote area with 713 t (Figure 13).

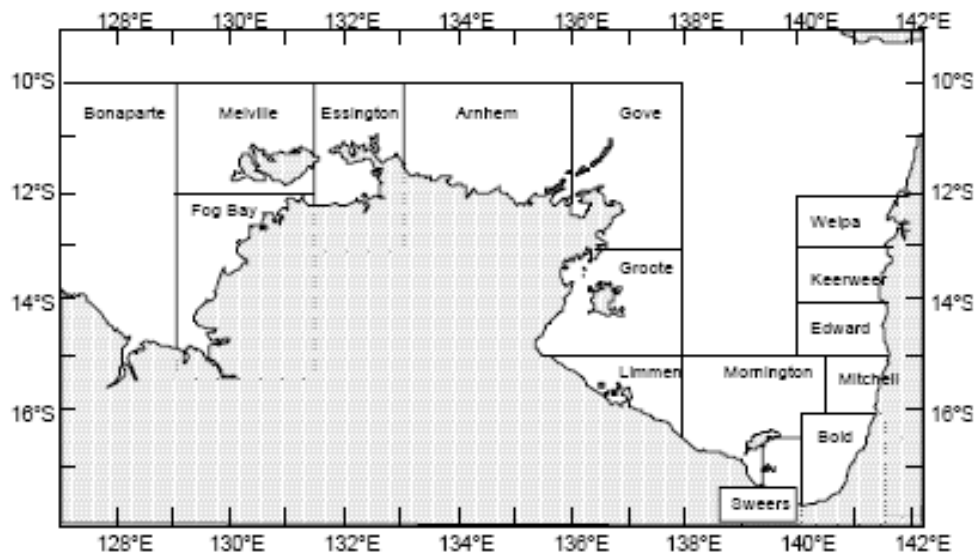


Figure 11: Statistical areas of the NPF.

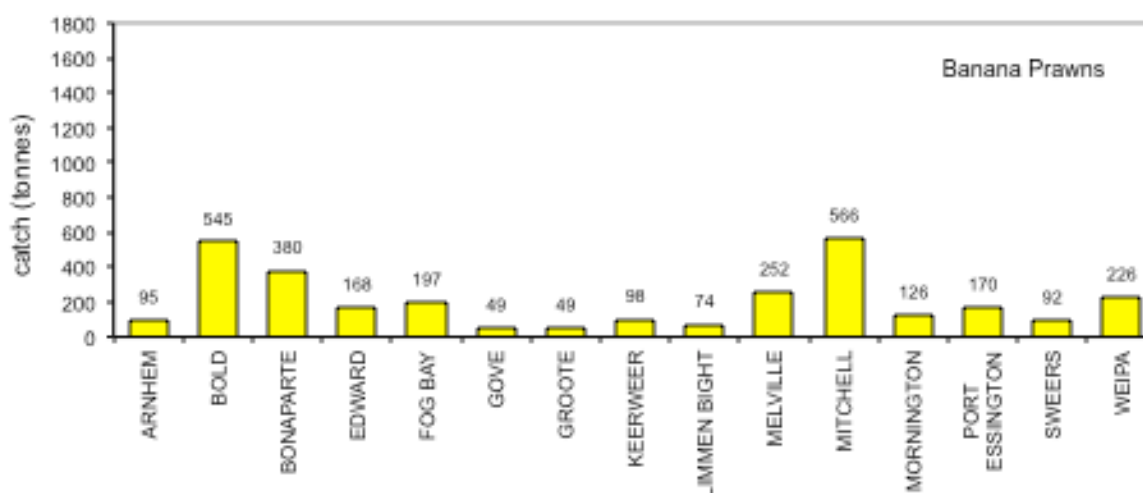


Figure 12: Total catch of banana prawns for each statistical area of the NPF in 2013.

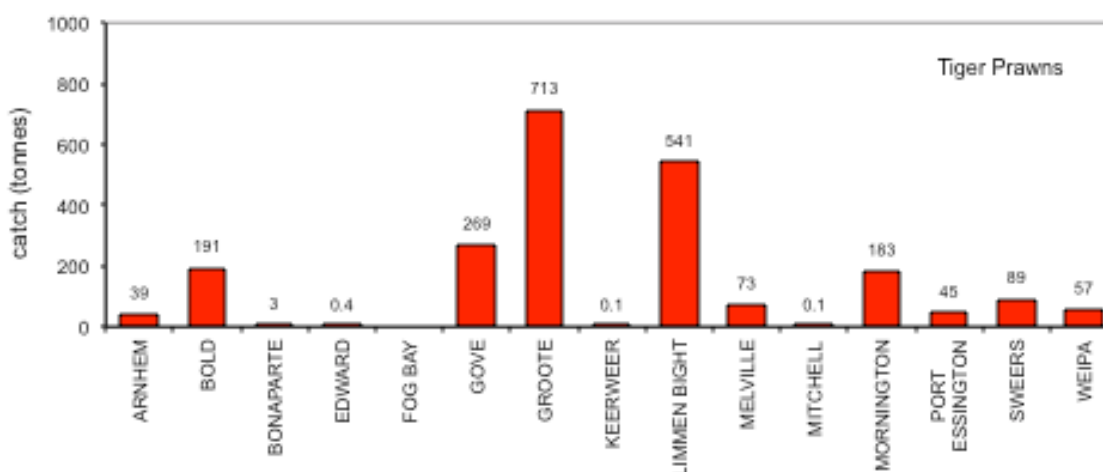


Figure 13: Total catch of tiger prawns for each statistical area of the NPF in 2013.

Weipa

Banana prawn catches in Weipa decreased from 486 t in 2012 to 226 t in 2013. Tiger prawn catches decreased from 94 t in 2012 to 57 t in 2013 and catches of endeavour prawns decreased from 166 t in 2012 to 60 t in 2013 (Figure 14). Banana prawns dominated the catches in Weipa during 2013, comprising 66%, with tiger and endeavor prawns making up 17% each, respectively (Figure 15).

Effort in the banana prawn fishery decreased from 200 days in 2012 to 108 days in 2013 (Figure 16a). CPUE of banana prawns decreased from 2.43 t per day in 2012 to 2.1 t per day in 2013 (Figure 16b). Effort in the tiger prawn fishery increased from 708 days in 2012 to 258 day in 2013 (Figure 16a). Nominal and effective CPUE of tiger prawns increased from 0.369 t and 0.146 t per day in 2012 respectively, to 0.452 t and 0.170 t per day in 2013 (Figure 16c).

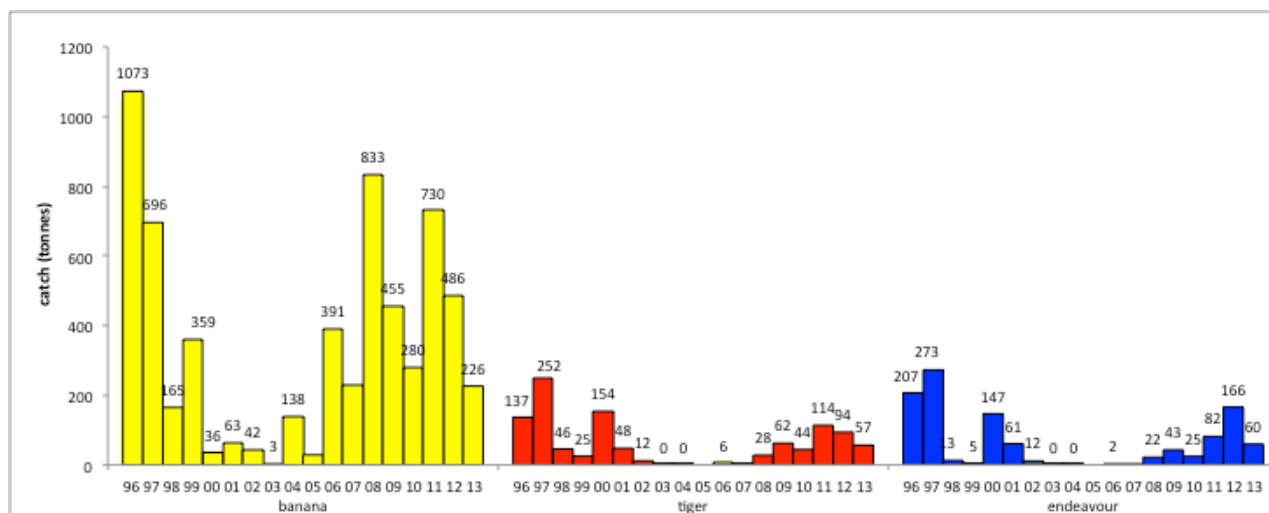


Figure 14: Catch by species in the Weipa area between 1996 and 2013.

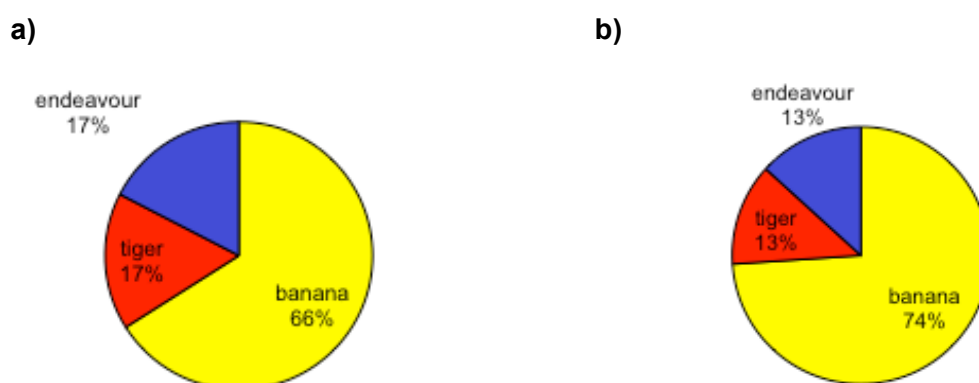


Figure 15: (a) Percentage catch of prawn species in the Weipa area during 2013, and (b) percentage catch of prawn species in the Weipa area from 1996 to 2013.

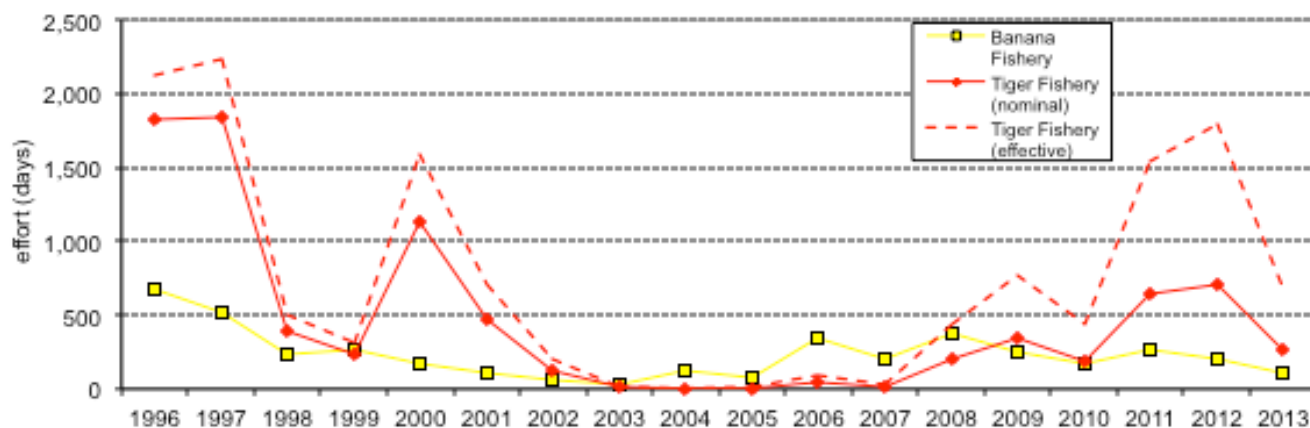


Figure 16a: Effort for the banana and tiger prawn fisheries in the Weipa area between 1996 and 2013.

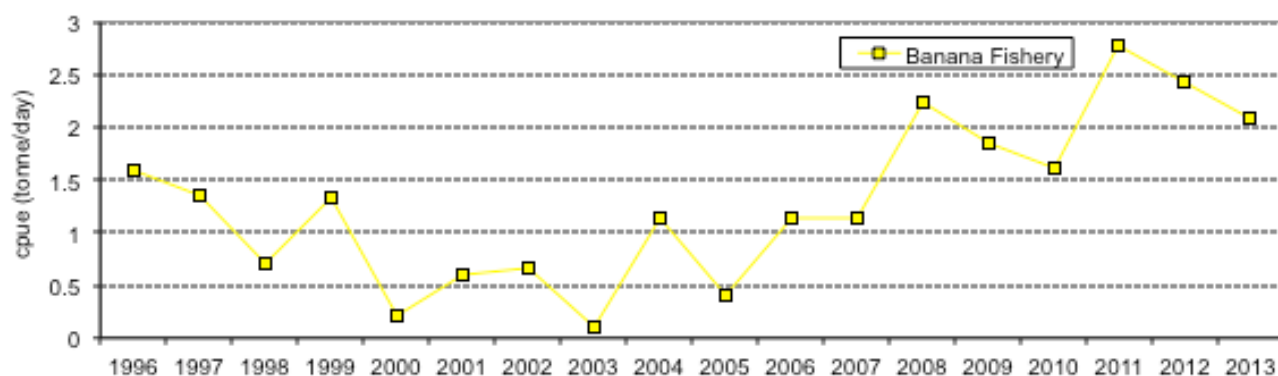


Figure 16b: Catch rate for the banana prawn fishery in the Weipa area between 1996 and 2013.

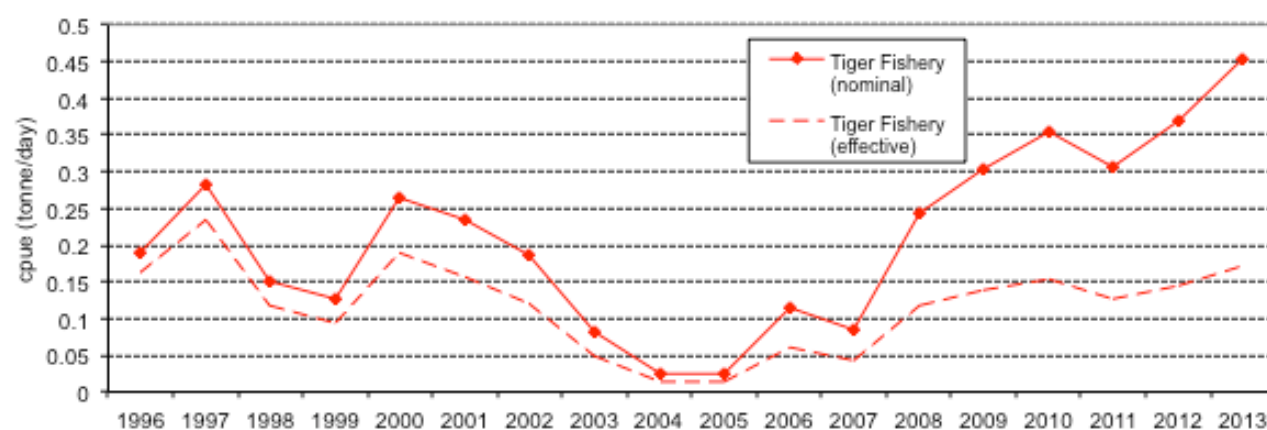


Figure 16c: Nominal and effective catch rate for the tiger prawn fishery in the Weipa area between 1996 and 2013.

Keerweer

Banana prawn catches in the Keerweer region decreased from 286 t in 2012 to 98 t in 2013. Catches of tiger and endeavor prawns were both <1 t in 2013, as in 2012 (Figure 17). Banana prawns comprised 100% of the catch in 2013 (Figure 18a).

Effort in the banana prawn fishery decreased from 135 days in 2012 to 78 days in 2013 (Figure 19a). CPUE for banana prawns decreased from 2.12 t per day in 2012 to 1.26 t per day in 2013 (Figure 19b). Nominal and effective CPUE of tiger prawns increased from 0.102 t and 0.040 t per day in 2012 to 0.130 and 0.049 in 2013, respectively (Figure 19c).

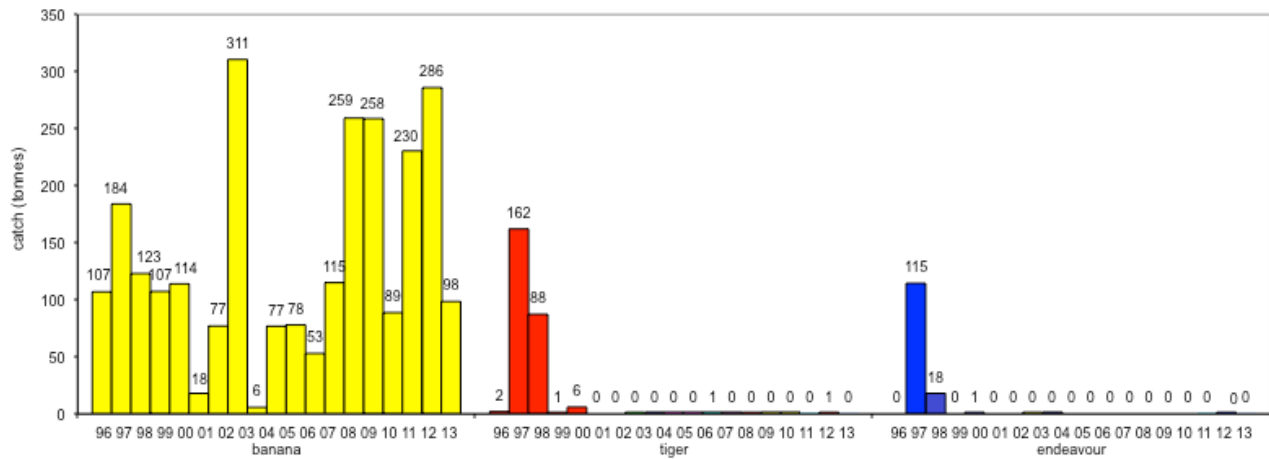


Figure 17: Catch by species in the Keerweer area between 1996 and 2013.

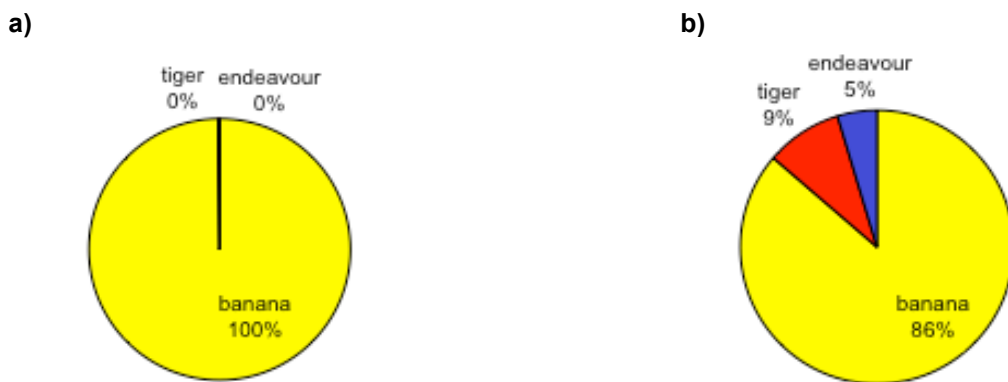


Figure 18: (a) Percentage catch of prawn species in the Keerweer area during 2013 and (b) percentage catch of prawn species in the Keerweer area from 1996 to 2013.

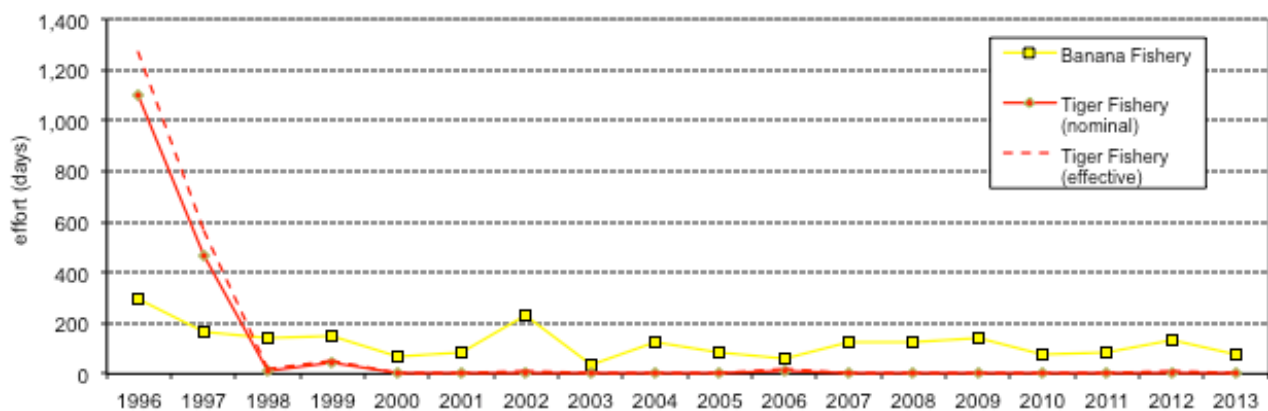


Figure 19a: Effort for the banana and tiger prawn fisheries in the Keerweer area between 1996 and 2013.



Figure 19b: Catch rate for the banana prawn fishery in the Keerweer area between 1994 and 2013.

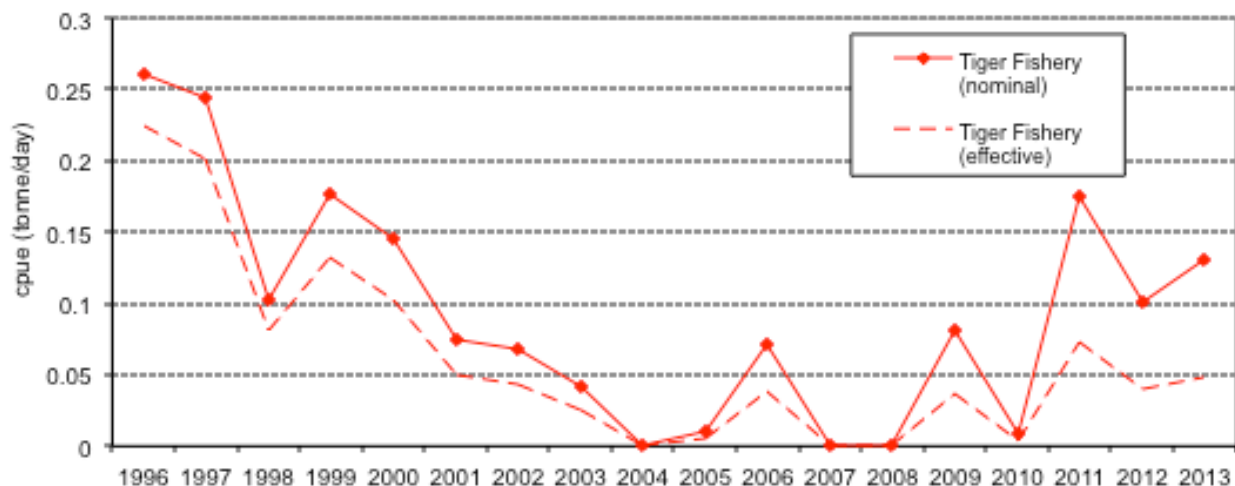


Figure 19c: Nominal and effective catch rate for the tiger prawn fishery in the Keerweer area between 1996 and 2013.

Edward

Banana prawn catches in the Edward area decreased from 634 t in 2012 to 168 t in 2013. Tiger prawns and Endeavor prawns were both less than 1 t (Figure 20). Banana prawns comprised 100% of the catch in 2013 (Figure 21).

Effort in the banana prawn fishery decreased from 297 days in 2012 to 125 days in 2013 (Figure 22a). CPUE of banana prawn decreased from 2.134 t per day in 2012 to 1.344 t per day in 2013 (Figure 22b). Nominal and effective CPUE of tiger prawns decreased from 0.374 t and 0.148 t per day in 2012 to 0.062 t and 0.025 t in 2013 (Figure 22a, c).

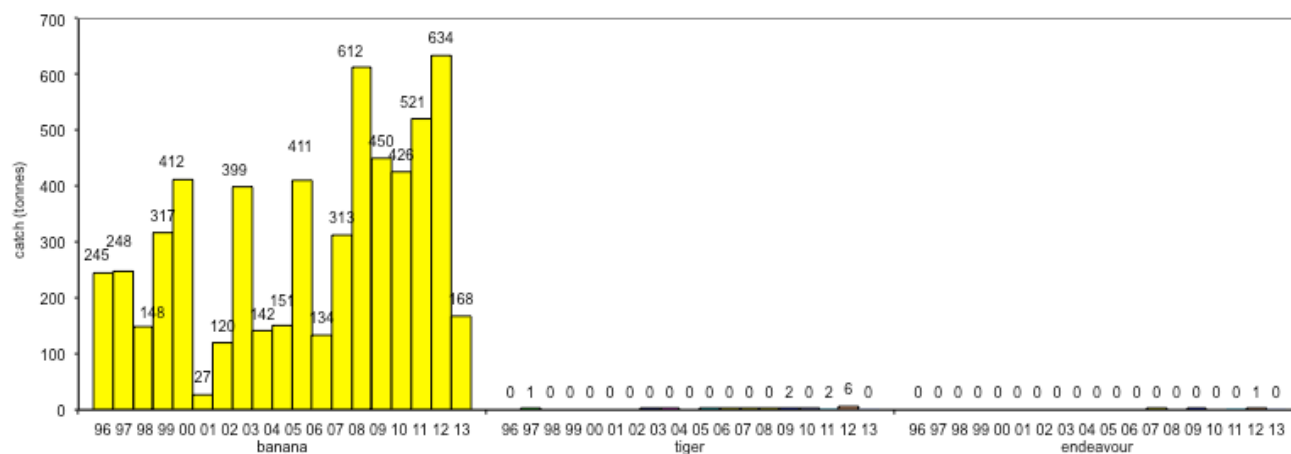


Figure 20: Catch by species in the Edward area between 1996 and 2013.



Figure 21: (a) Percentage catch of prawn species in the Edward area during 2013 and (b) percentage catch of prawn species in the Edward area from 1996 to 2013.

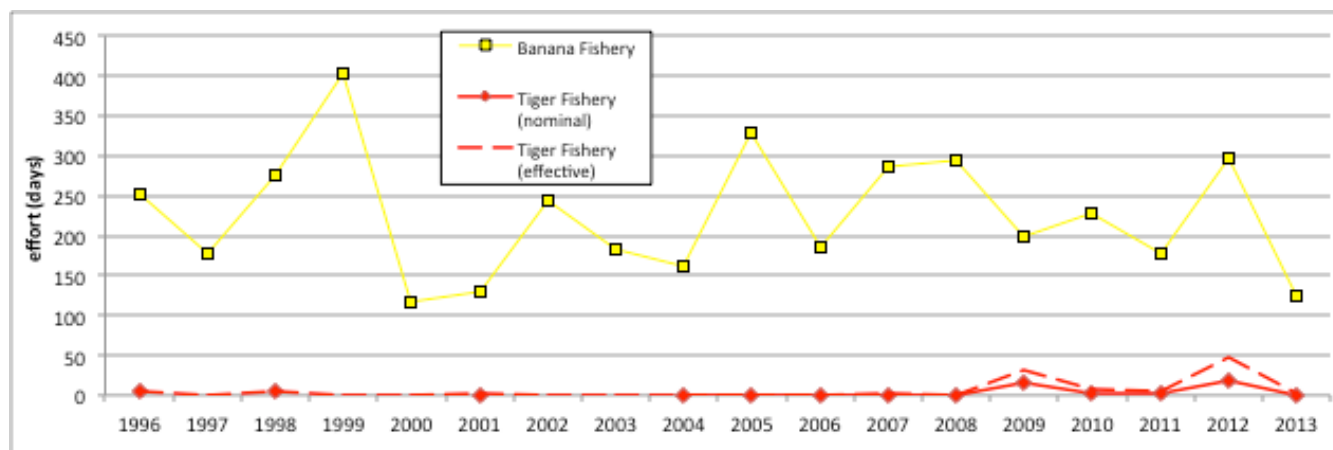


Figure 22a: Effort for the banana and tiger prawn fisheries in the Edward area between 1996 and 2013.

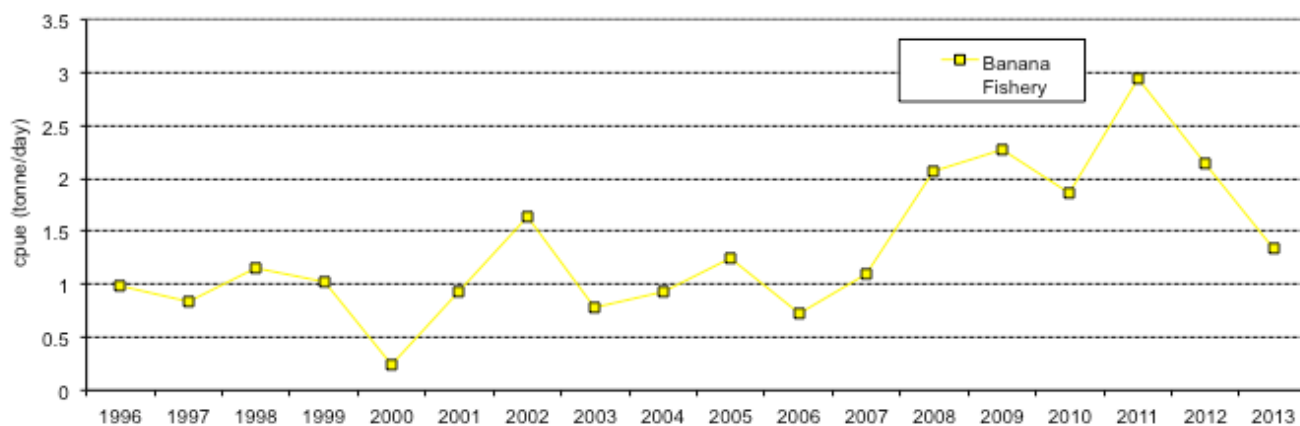


Figure 22b: Catch rate for the banana prawn fishery in the Edward area between 1996 and 2013.

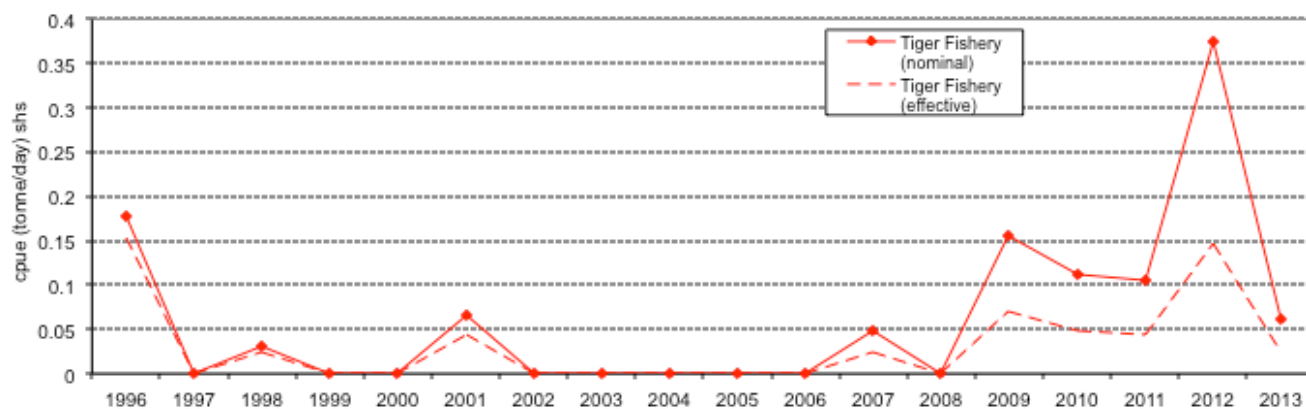


Figure 22c: Nominal and effective catch rate for the tiger prawn fishery in the Edward area between 1996 and 2013.

Mitchell

Banana prawn catches in the Mitchell area increased from 326 t in 2012 to 566 t in 2013. Tiger and endeavour prawn catches were both 0 t, as in 2012 (Figure 23). Banana prawns comprised 100% of the catch in this area during 2013 (Figure 24).

Effort in the Banana prawn fishery increased from 169 days in 2012 to 200 days in 2013 (Figure 25a). CPUE of banana prawns increased from 1.931 t per day in 2012 to 2.832 t per day in 2013 (Figure 25b). Nominal and effective CPUE of tiger prawns decreased from 0.243 t and 0.096 t in 2012 to zero in 2013 (Figure 25a, c).

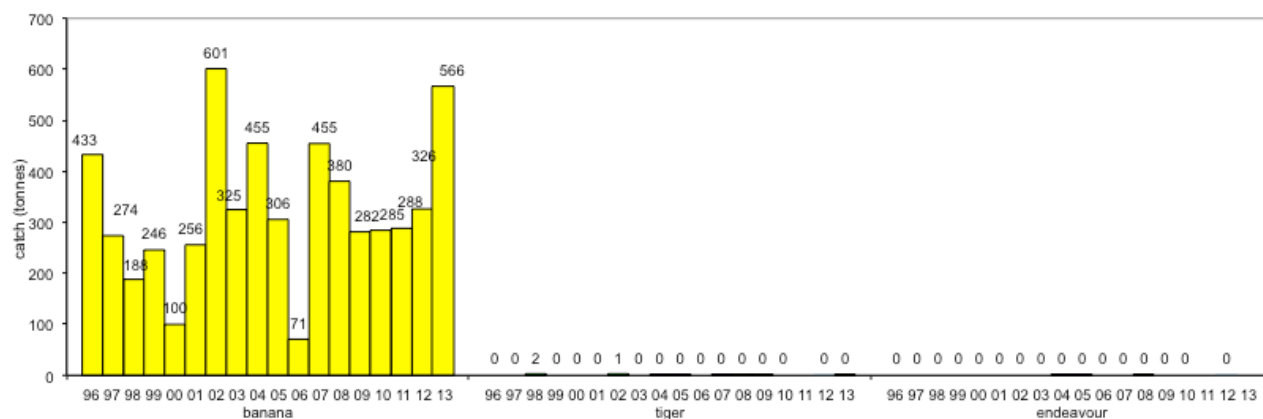


Figure 23: Catch by species in the Mitchell area between 1996 and 2013.

a)



b)

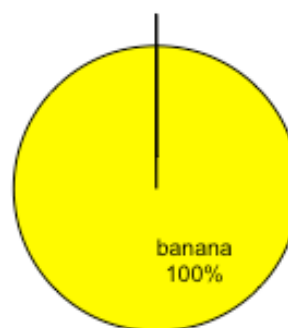


Figure 24: (a) Percentage catch of prawn species in the Mitchell area during 2013 and (b) percentage catch of prawn species in the Mitchell area from 1996 to 2013.



Figure 25a: Effort for the banana and tiger prawn fisheries in the Mitchell area between 1996 and 2013.

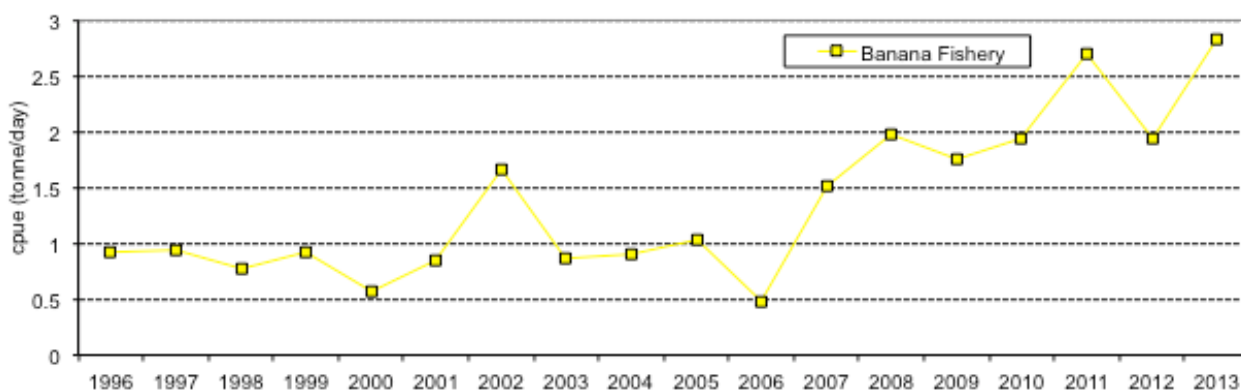


Figure 25b: Catch rate for the banana prawn fishery in the Mitchell area between 1996 and 2013.

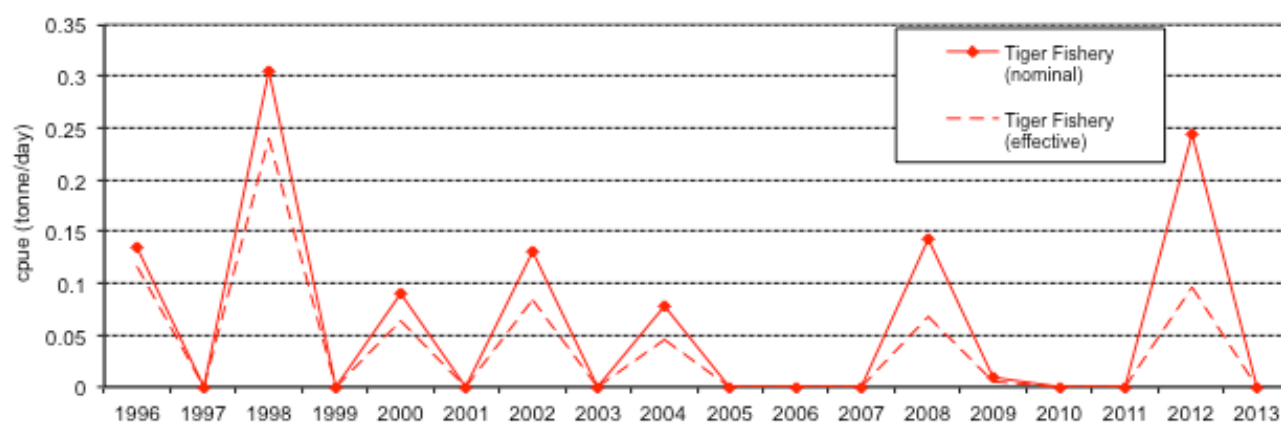


Figure 25c: Nominal and effective catch rate for the tiger prawn fishery in the Mitchell area between 1996 and 2013.

Bold

Banana prawn catches in the Bold area decreased from 912 t in 2012 to 545 t in 2013. Catches of tiger prawns increased from 110 t in 2012 to 191 t in 2013. Endeavour prawns catches increased slightly from 45 t in 2012 to 54 t in 2013 (Figure 26). Banana prawns dominated the catch in this area in 2013, comprising 69% of the catch, with tiger prawns (24%) and endeavour prawns (7% making up the remainder (Figure 27a).

Effort in the banana prawn fishery decreased from 368 days in 2012 to 278 in 2013 (Figure 28a). CPUE of banana prawns decreased from 2.46 t per day in 2012 to 1.95 t per day in 2013 (Figure 28b). Effort in the tiger prawn fishery increased from 347 days in 2012 to 539 in 2013 (Figure 28a). Nominal and effective CPUE of tiger prawns increased from 0.466 and 0.185 t per day in 2011, to 0.465 and 0.175 t per day in 2013 (Figure 28c).

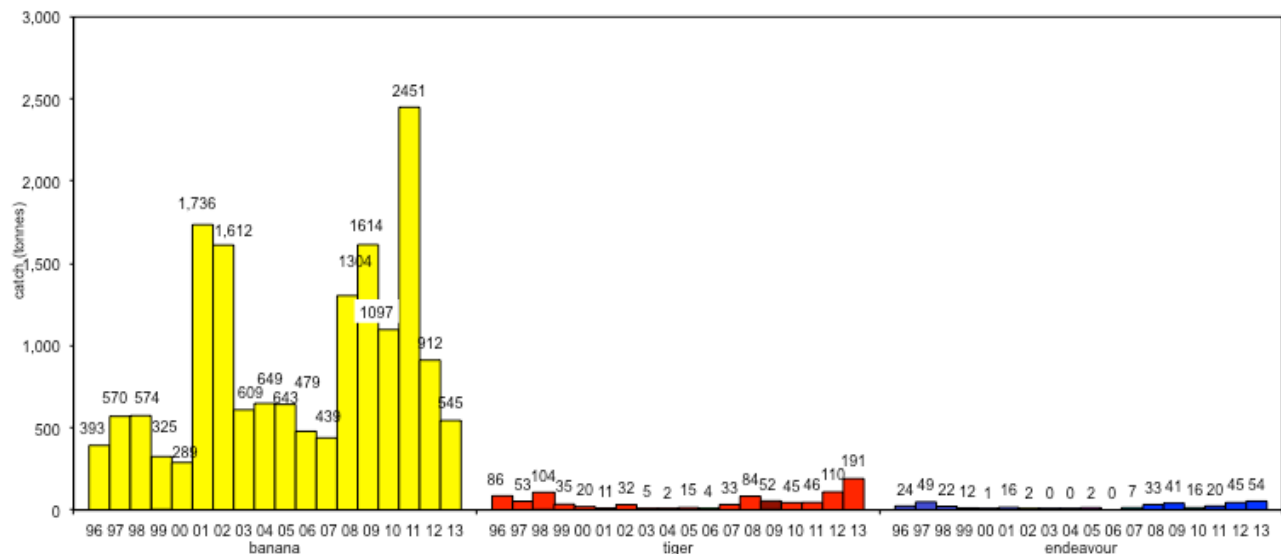


Figure 26: Catch by species in the Bold area between 1996 and 2013.

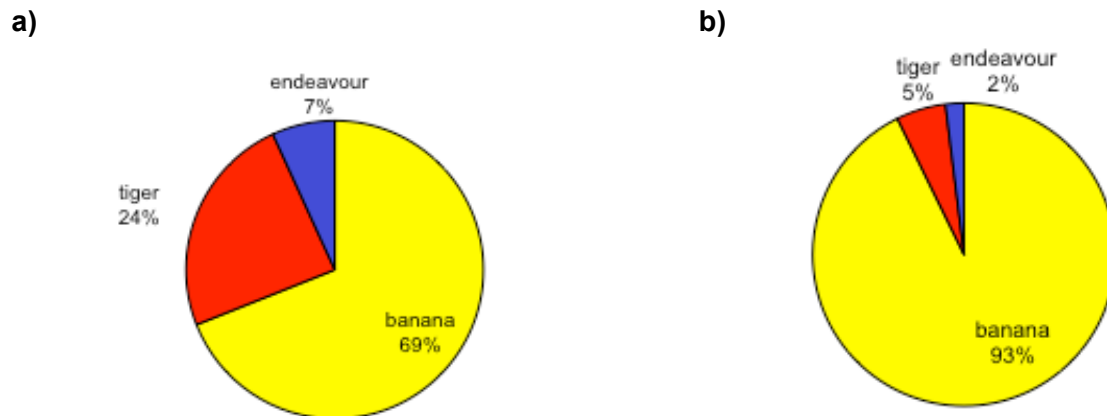


Figure 27: (a) Percentage catch of prawn species in the Bold area during 2013 and (b) catch of prawn species in the Bold area from 1996 to 2013.

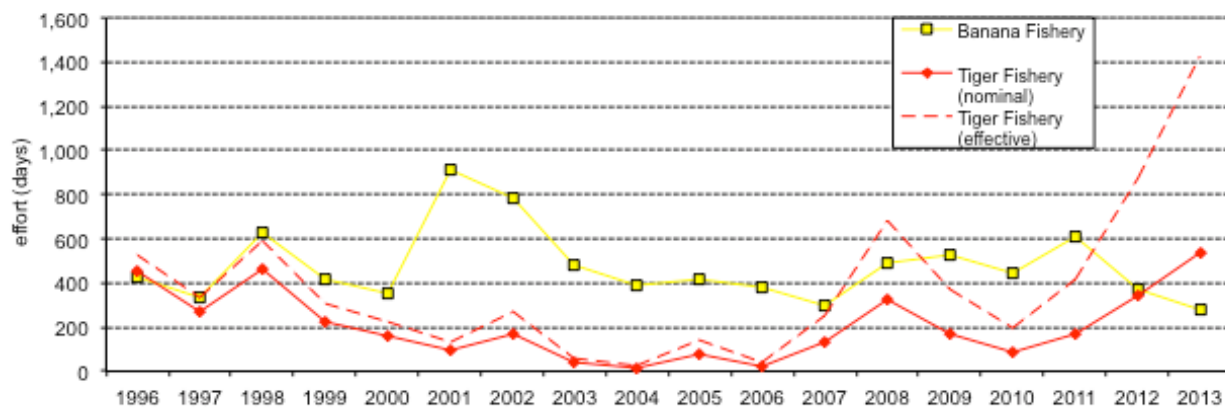


Figure 28a: Effort for the banana and tiger prawn fisheries in the Bold area between 1996 and 2013.

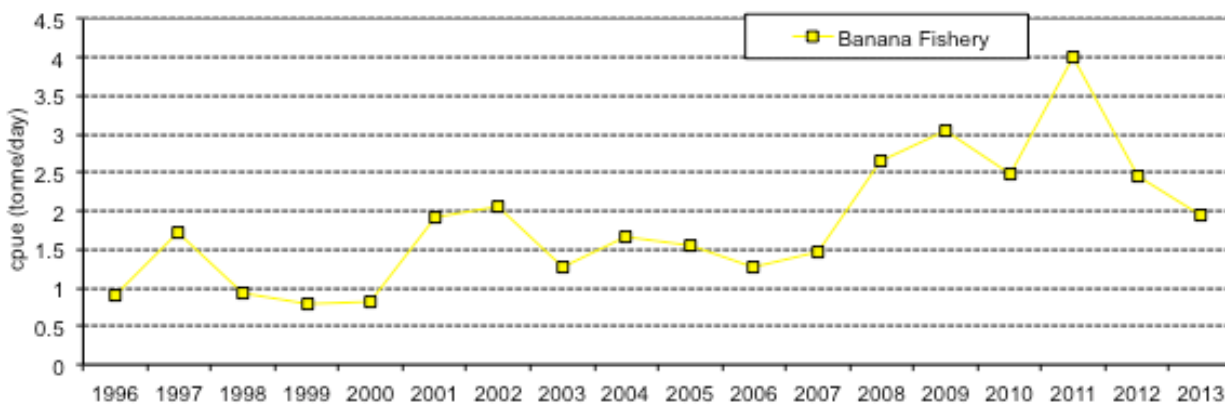


Figure 28b: Catch rate for the banana prawn fishery in the Bold area between 1996 and 2013.

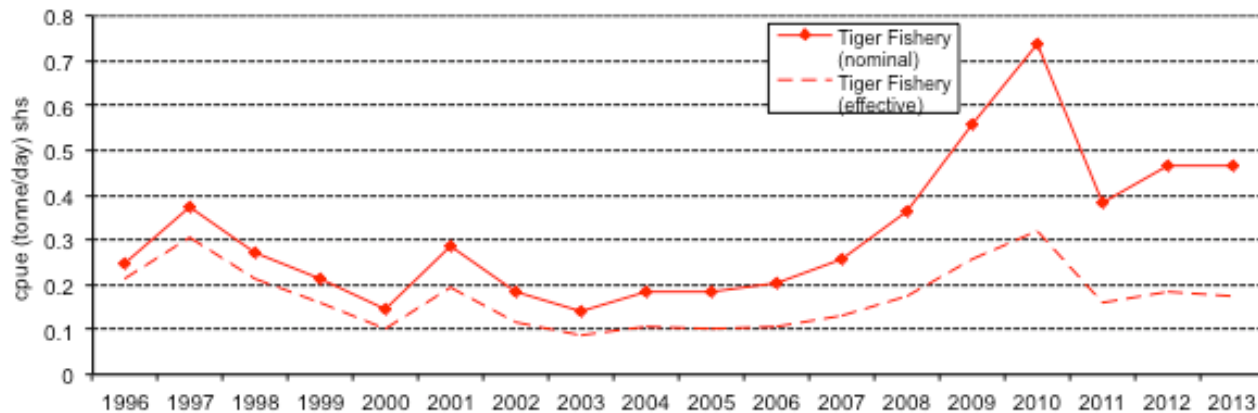


Figure 28c: Nominal and effective catch rate for the tiger prawn fishery in the Bold area between 1996 and 2013.

Sweers

Banana prawn catches in the Sweers area decreased from 177 t in 2012 to 92 t in 2013. Catches of tiger prawns increased from 50 t in 2012 to 89 t in 2013, and endeavour prawns increased from 49 t in 2012 to 61 t in 2013 (Figure 29). Banana prawns comprised 38% of the catch for 2013, with tiger and Endeavor prawns comprising 37% and 25%, respectively (Figure 30).

Effort in the banana fishery decreased from 65 days in 2012 to 45 days in 2013 (Figure 31a). CPUE of banana prawn decreased from 2.673 t per day in 2012 to 1.99 t per day in 2013 (Figure 31b). Effort in the tiger prawn fishery increased from 219 days in 2012 to 260 days in 2013 (Figure 31a). Nominal and effective CPUE of tiger prawns for 2012 increased slightly from 0.468 and 0.185 t per day in 2012 to 0.587 and 0.221 t per day in 2013 (Figure 31c).

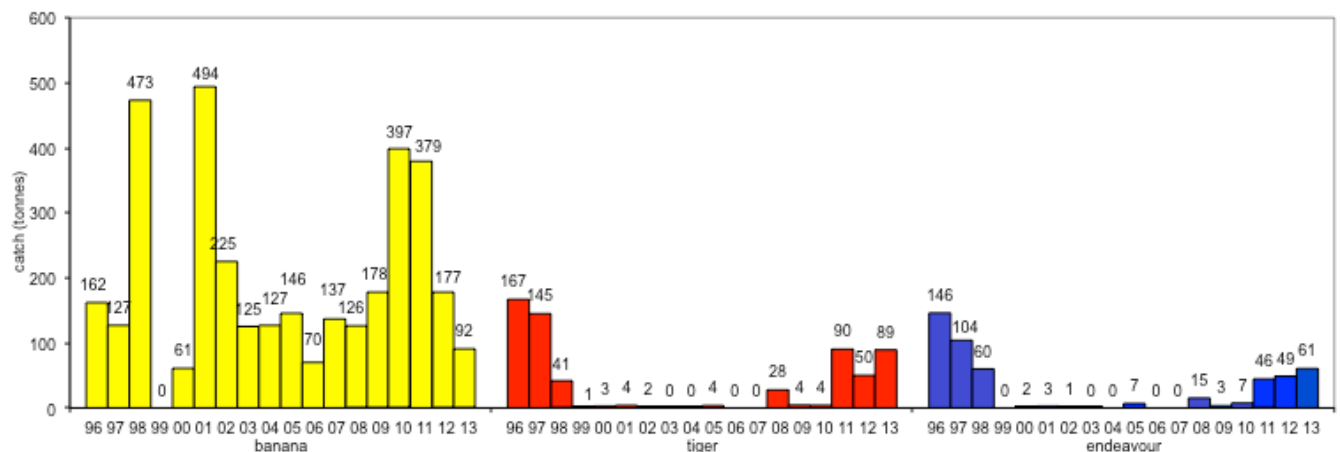
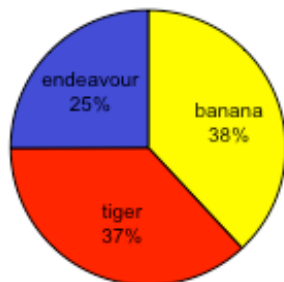


Figure 29: Catch by species in the Sweers area between 1996 and 2013.

a)



b)

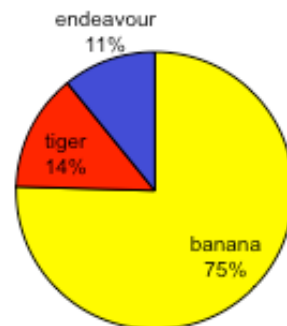


Figure 30: (a) Percentage catch of prawn species in the Sweers area during 2013, and (b) percentage catch of prawn species in the Sweers area from 1996 to 2013.

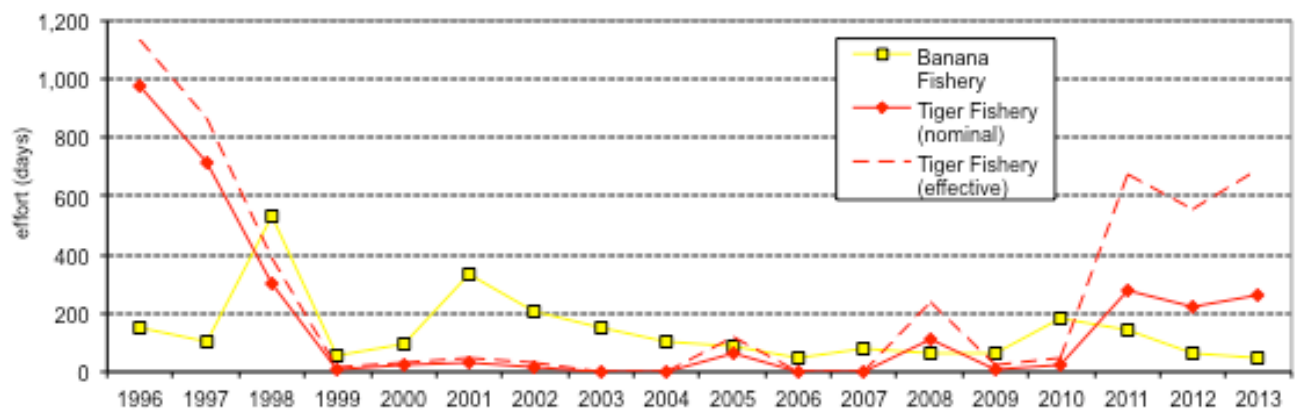


Figure 31a: Effort for the banana and tiger prawn fisheries in the Sweers area between 1996 and 2013.

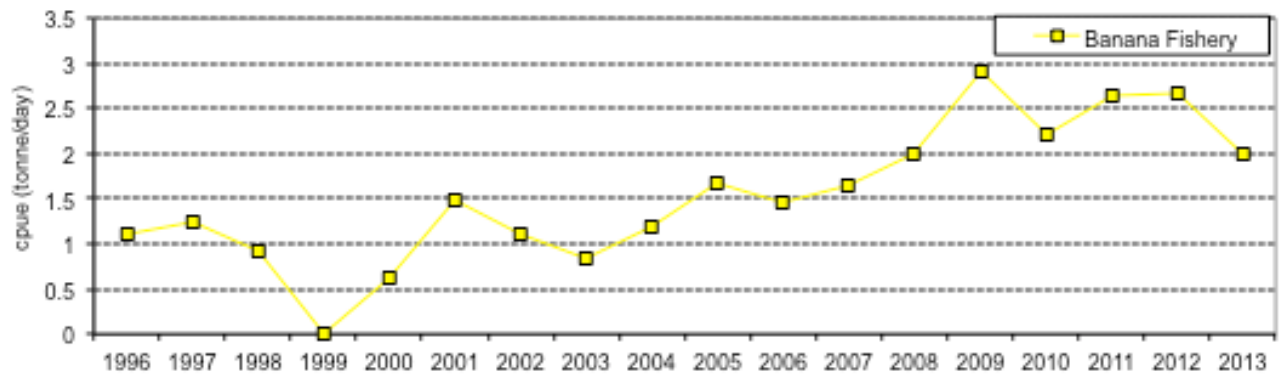


Figure 31b: Catch rate for the banana prawn fishery in the Sweers area between 1996 and 2013.

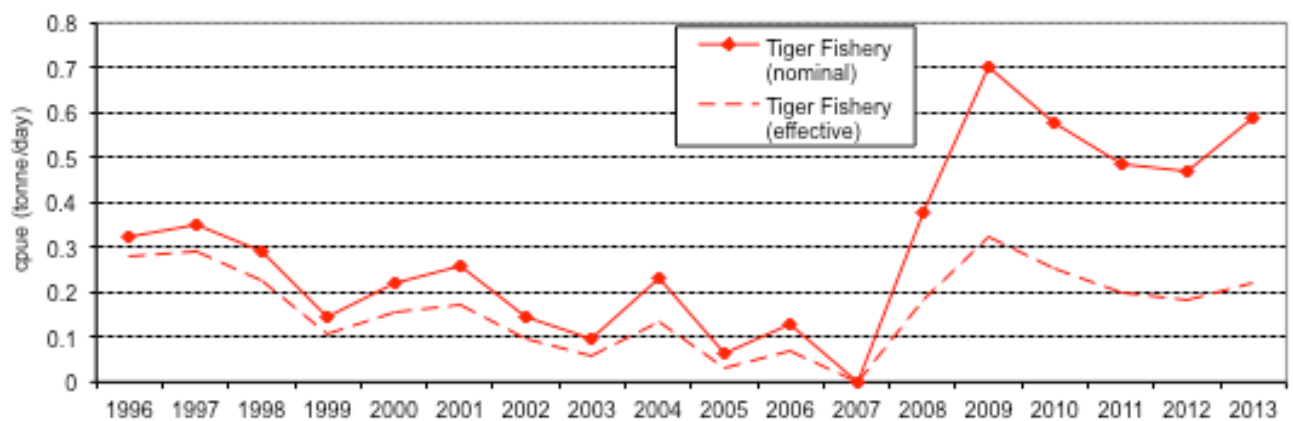


Figure 31c: Nominal and effective catch rate for the tiger prawn fishery in the Sweers area between 1996 and 2013.

Mornington

Banana prawn catches in the Mornington area increased from 21 t in 2012 to 126 t in 2013. Catches of tiger prawns increased from 70 t in 2012 to 183t in 2013. Endeavour prawn catches increased from 4 t in 2012 to 49 t in 2013 (Figure 32). Tiger prawns dominated the catch in this area, contributing 51% of the catch in 2013, with banana and Endeavor prawns contributing 35% and 14% to the total catch, respectively (Figure 33).

Effort in the banana fishery increased from 7 days in 2012 to 83 days in 2013 (Figure 34a). CPUE of banana prawns decreased from 2.945 t per day in 2012 to 1.492 t per day in 2013 (Figure 34b). Effort in the tiger prawn fishery increased from 227 days in 2012 to 546 in 2013 (Figure 34a). Nominal and effective CPUE of tiger prawns increased from 0.326 and 0.129 t per day in 2012 to 0.432 and 0.163 t per day in 2013, respectively (Figure 34c).

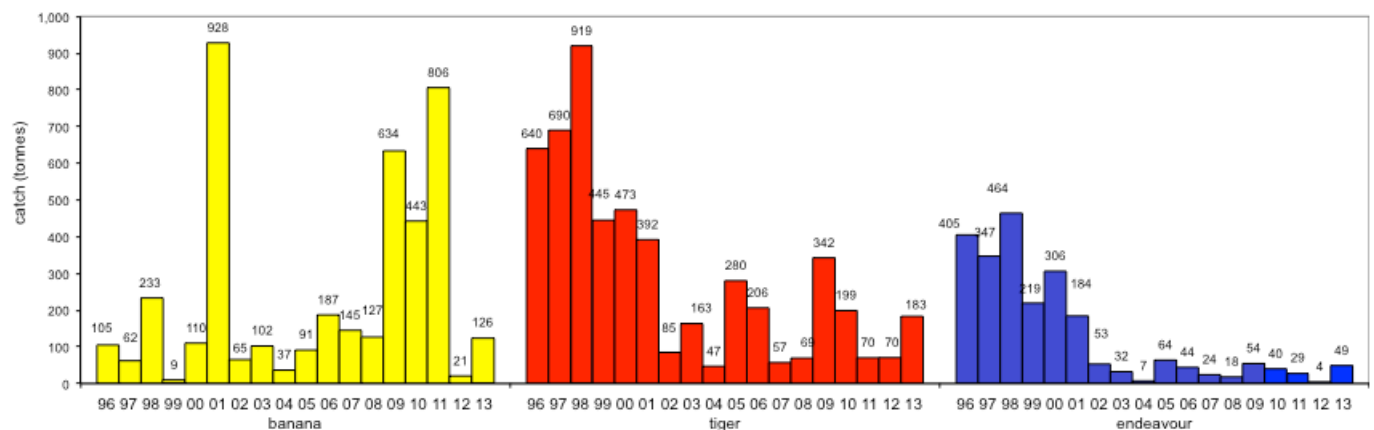
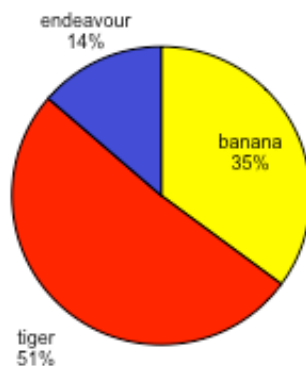


Figure 32: Catch by species in the Mornington area between 1996 and 2013.

a)



b)

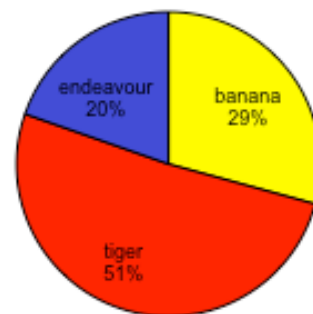


Figure 33: (a) Percentage catch of prawn species in the Mornington area during 2013 and (b) percentage catch of prawn species in the Mornington area from 1996 to 2013.

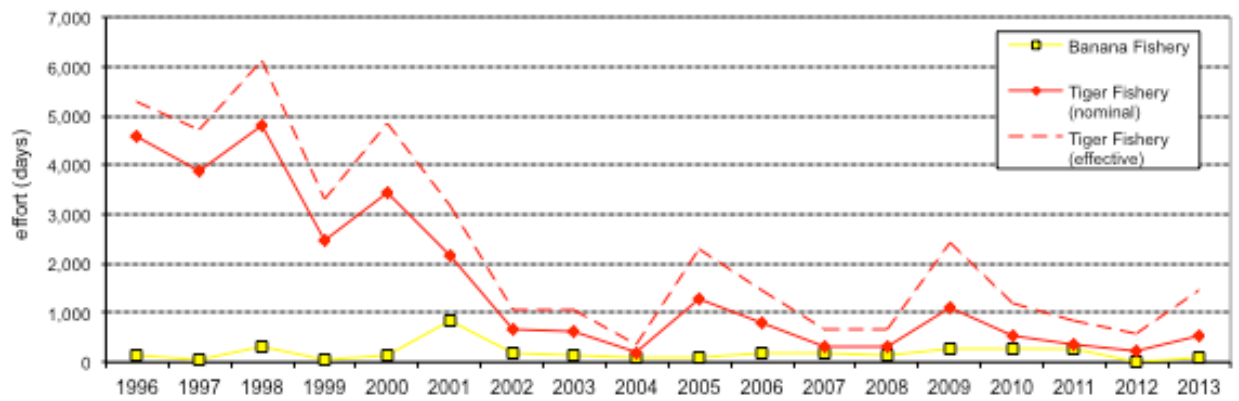


Figure 34a: Effort for the banana and tiger prawn fisheries in the Mornington area between 1996 and 2013.

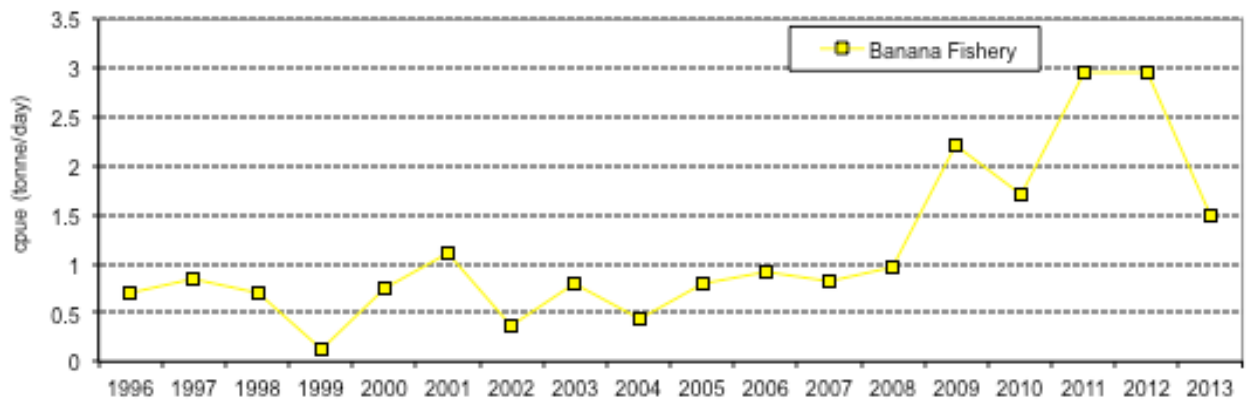


Figure 34b: Catch rate for the banana prawn fishery in the Mornington area between 1996 and 2013.

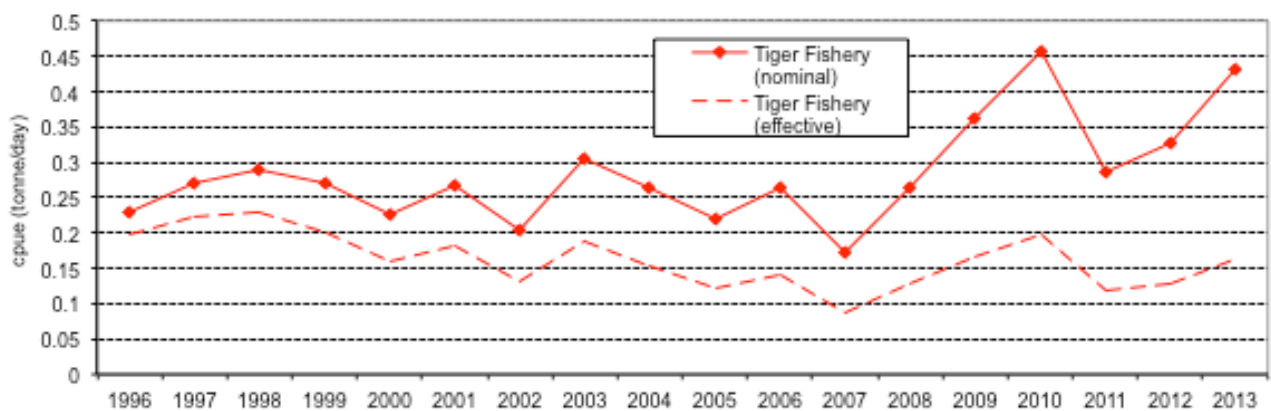


Figure 34c: Nominal and effective catch rate for the tiger prawn fishery in the Mornington area between 1996 and 2013.

Limmen Bight

Banana prawn catches in the Limmen Bight area remained at 74 t in 2013. Catches of tiger prawns increased from 235 t in 2012 to 541 t in 2013. Endeavour prawn catches increased from 37 t in 2012 to 51 t in 2013 (Figure 35). Tiger prawns dominated catches for 2013, comprising 81% of the total catch (Figure 36).

Effort in the banana fishery increased from 43 days in 2012 to 63 days in 2013 (Figure 37a). CPUE of banana prawns decreased from 1.756 t per day in 2012 to 1.218 t per day in 2013 (Figure 37b). Effort in the tiger prawn fishery increased from 919 days in 2012 to 1288 t in 2013 (Figure 37a). Nominal and effective CPUE of tiger prawns increased from 0.294 and 0.117 t per day in 2012, to 0.457 and 0.172 t per day, respectively (Figure 37c).

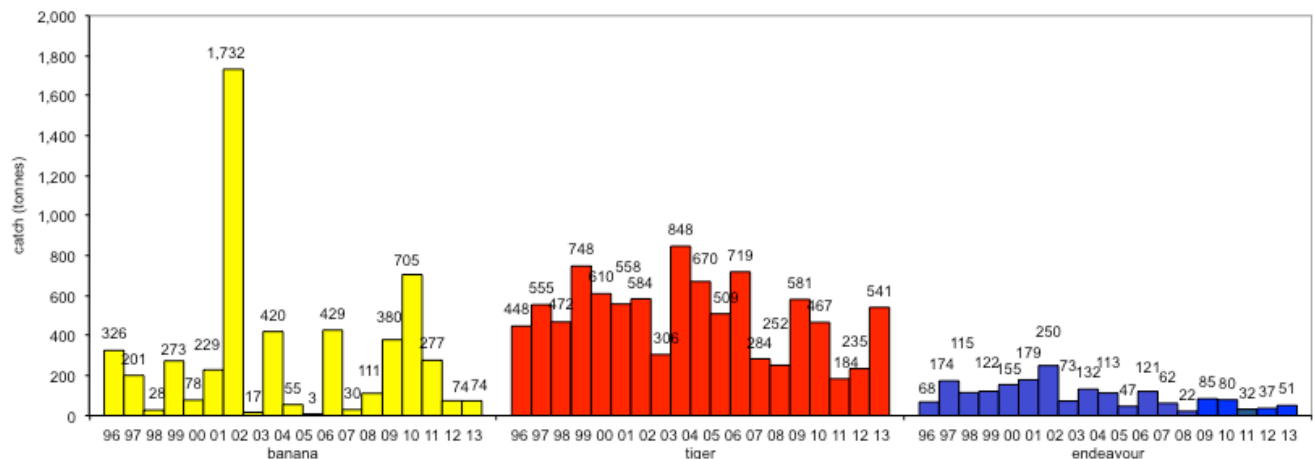
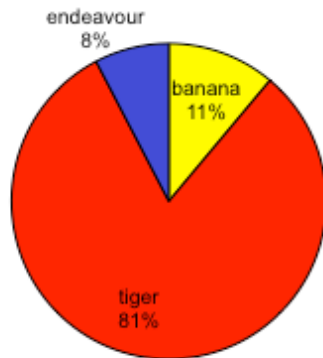


Figure 35: Catch by species in the Limmen Bight area between 1996 and 2013.

a)



b)

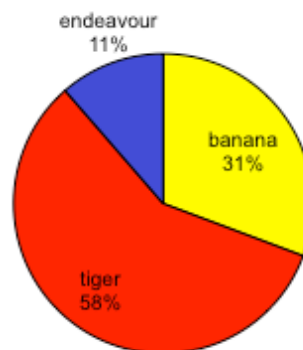


Figure 36: (a) Percentage catch of prawn species in the Limmen Bight area during 2013 and (b) percentage catch of prawn species in the Limmen Bight area from 1996 to 2013.

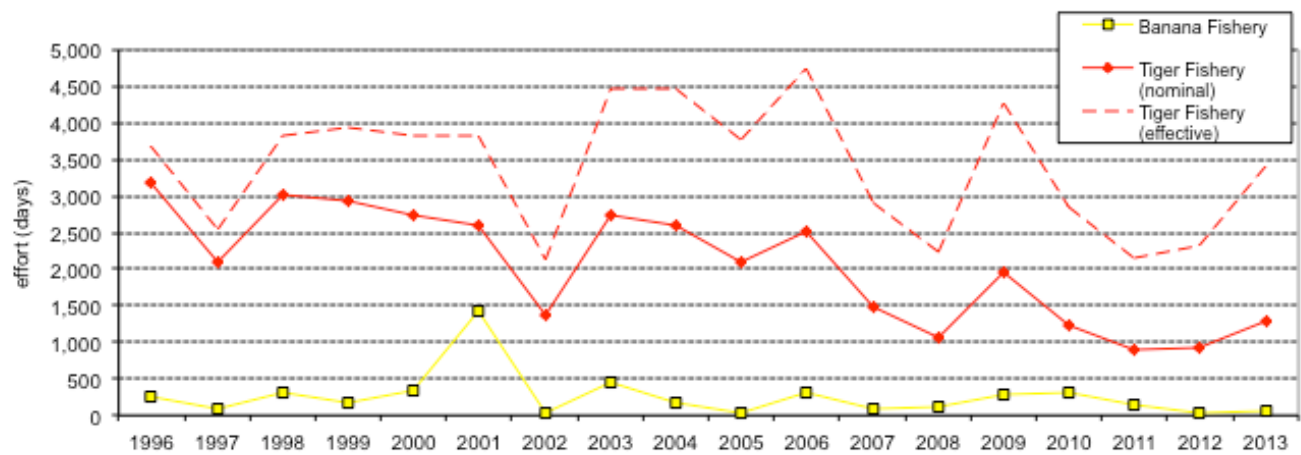


Figure 37a: Effort for the banana and tiger prawn fisheries in the Limmen Bight area between 1996 and 2013.

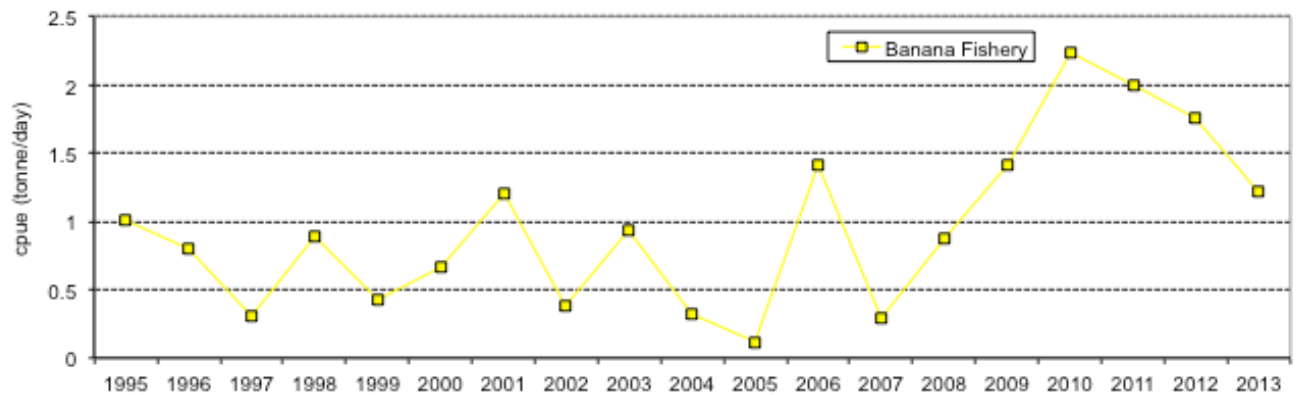


Figure 37b: Catch rate for the banana prawn fishery in the Limmen Bight area between 1996 and 2013.



Figure 37c: Nominal and effective catch rate for the tiger prawn fishery in the Limmen Bight area between 1996 and 2013.

Groote

Banana prawn catches in the Groote area increased slightly from 44 t in 2012 to 49 t in 2013. Catches of tiger prawns increased from 287 t in 2012 to 713 t in 2013. Endeavour prawn catches increased from 95 t in 2012 to 110 t in 2013 (Figure 38). In 2013, prawn catch comprised of 82% tiger prawns, 13% endeavour prawns and 5% banana prawns (Figure 39).

Effort in the banana fishery decreased from 51 days in 2012 to 31 in 2013 (Figure 40a). CPUE of banana prawns increased from 0.915 t per day in 2012 to 1.22 t per day in 2013 (Figure 40b). Effort in the tiger prawn fishery increased from 1369 days in 2012 to 1888 days in 2013 (Figure 40a). Nominal and effective CPUE of tiger prawns increased from 0.277 and 0.110 t per day in 2012 to 0.442 and 0.167 in 2013, respectively (Figure 40c).

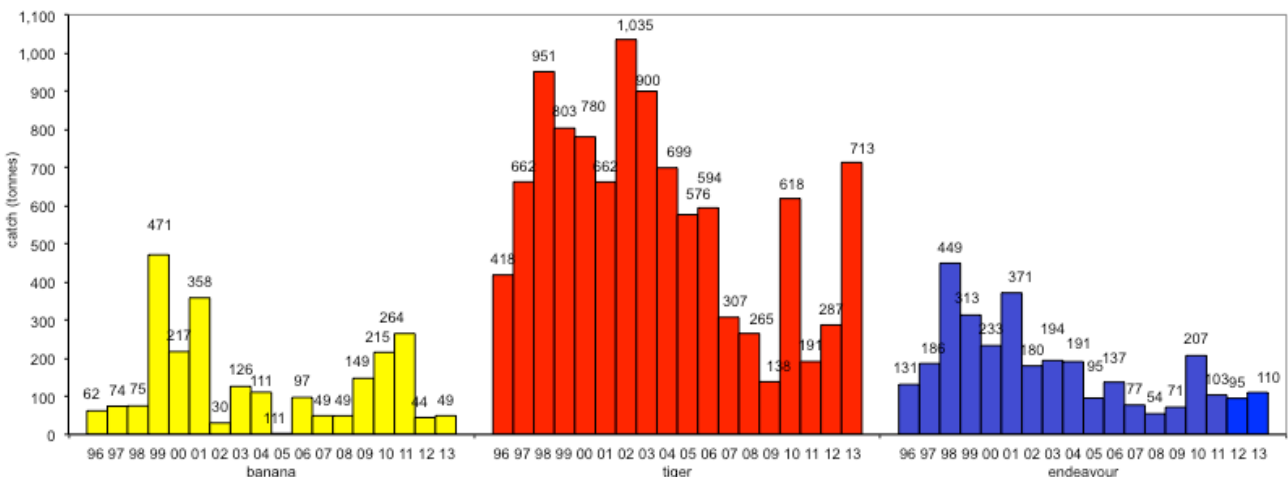
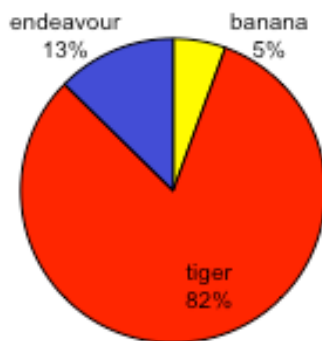


Figure 38: Catch by species in the Groote area between 1996 and 2013.

a)



b)

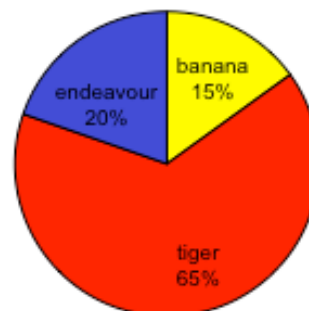


Figure 39: (a) Percentage catch of prawn species in the Groote area during 2013 and (b) percentage catch of prawn species in the Groote area from 1996 to 2013.

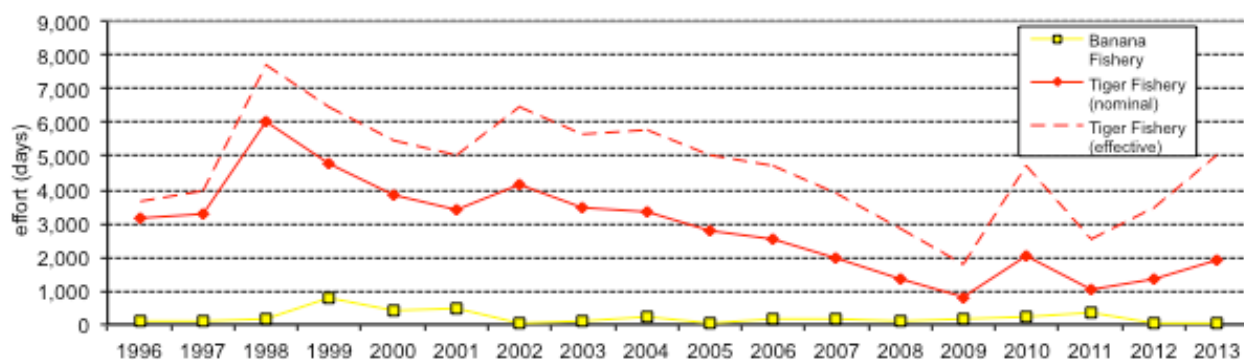


Figure 40a: Effort for the banana and tiger prawn fisheries in the Groote area between 1996 and 2013.

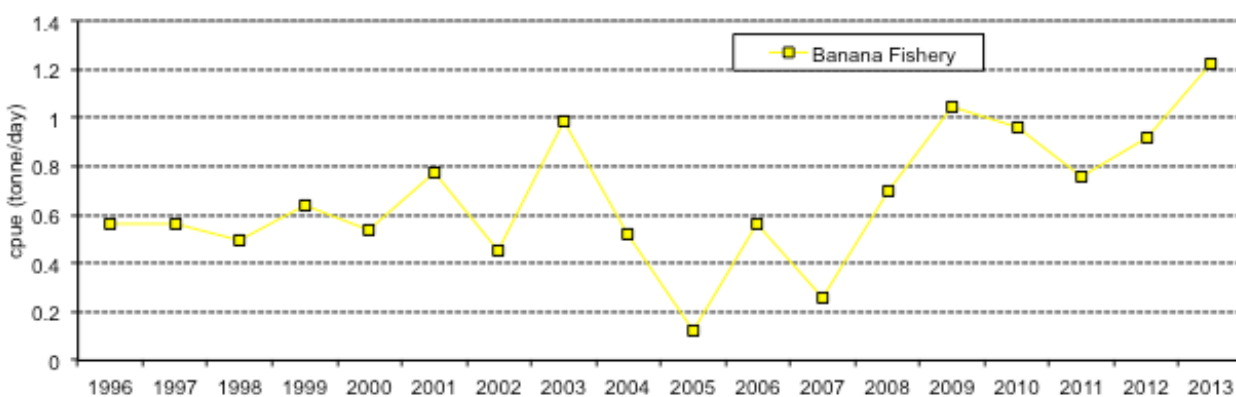


Figure 40b: Catch rate for the banana prawn fishery in the Groote area between 1996 and 2013.



Figure 40c: Nominal and effective catch rate for the tiger prawn fishery in the Groote area between 1996 and 2013.

Gove

Banana prawn catches in the Gove area decreased from 77 t in 2012 to 49 t in 2013. Catches of tiger prawns increased from 162 t in 2012 to 269 t in 2013. Endeavour prawn catches also increased slightly from 27 t in 2012 to 28 t in 2013 (Figure 41). Tiger prawns dominated the catch from this area in 2013, comprising 78% of the catch, with banana prawns making up 14% and endeavour prawns the remaining 8% (Figure 42).

Effort in the banana fishery decreased from 87 days in 2012 (Figure 43a) to 36 in 2013. CPUE of banana prawns increased from 0.882 t per day in 2012 to 1.356 t per day in 2013 (Figure 43b). Effort in the tiger prawn fishery increased from 697 days in 2012 to 732 days in 2013 (Figure 43a). Nominal and effective CPUE for tiger prawns increased from 0.271 and 0.107 t per day in 2012 to 0.406 and 0.153 t per day in 2013 (Figure 43c).

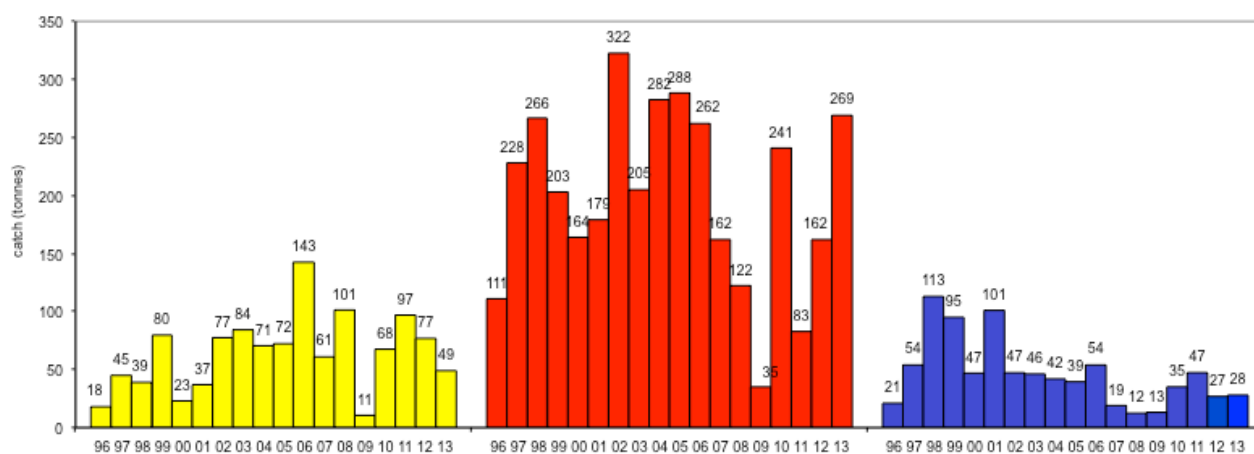
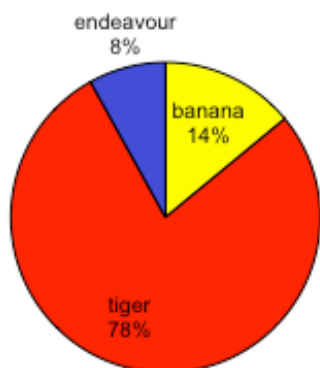


Figure 41: Catch by species in the Gove area between 1996 and 2013.

a)



b)

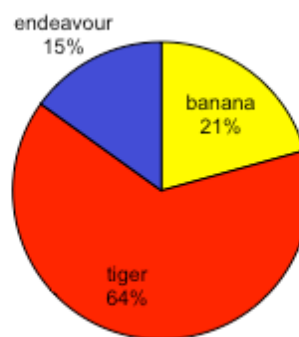


Figure 42: (a) Percentage catch of prawn species in the Gove area during 2013 and (b) percentage catch of prawn species in the Gove area from 1996 to 2013.



Figure 43a: Effort for the banana and tiger prawn fisheries in the Gove area between 1996 and 2013.

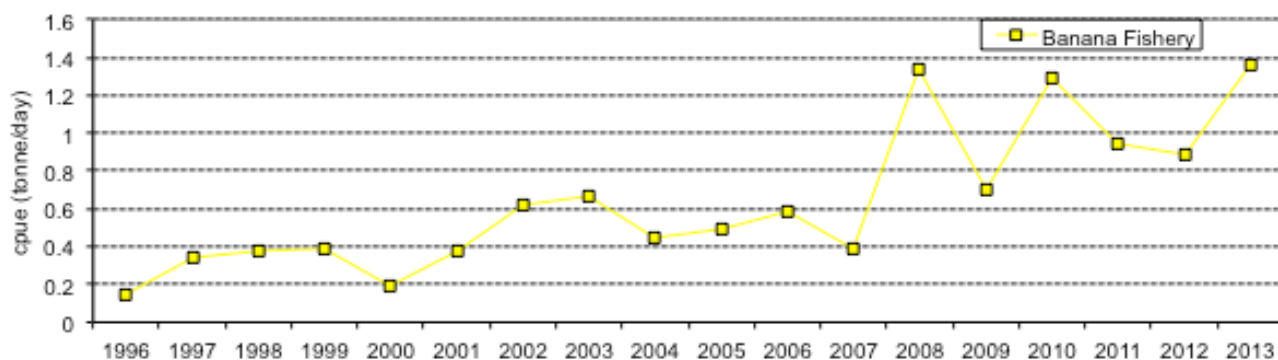


Figure 43b: Catch rate for the banana prawn fishery in the Gove area between 1996 and 2013.



Figure 43c: Nominal and effective catch rate for the tiger prawn fishery in the Gove area between 1996 and 2013.

Arnhem

Banana prawn catches in the Arnhem area decreased from 305 t in 2012 to 95 t in 2013. Catches of tiger prawns increased from 5 t in 2012 to 39 t in 2013. Three tonnes of endeavour prawns were caught in 2013, with none caught in 2013 (Figure 44). Banana prawns dominated the catch for 2013, comprising 98% of the total catch (Figure 45).

Effort in the banana fishery decreased from 102 days in 2012 to 58 days in 2013 (Figure 46a). CPUE of banana prawns decreased from 2.994 t per day in 2012 to 1.641 t per day in 2013 (Figure 46b). Effort in the tiger prawn fishery increased from 22 days in 2012 to 120 days in 2013 (Figure 46a). Nominal and effective CPUE of tiger prawns increased from 0.221 and 0.087 t per day respectively in 2012, to 0.358 and 0.135 t per day in 2013 (Figure 46c).

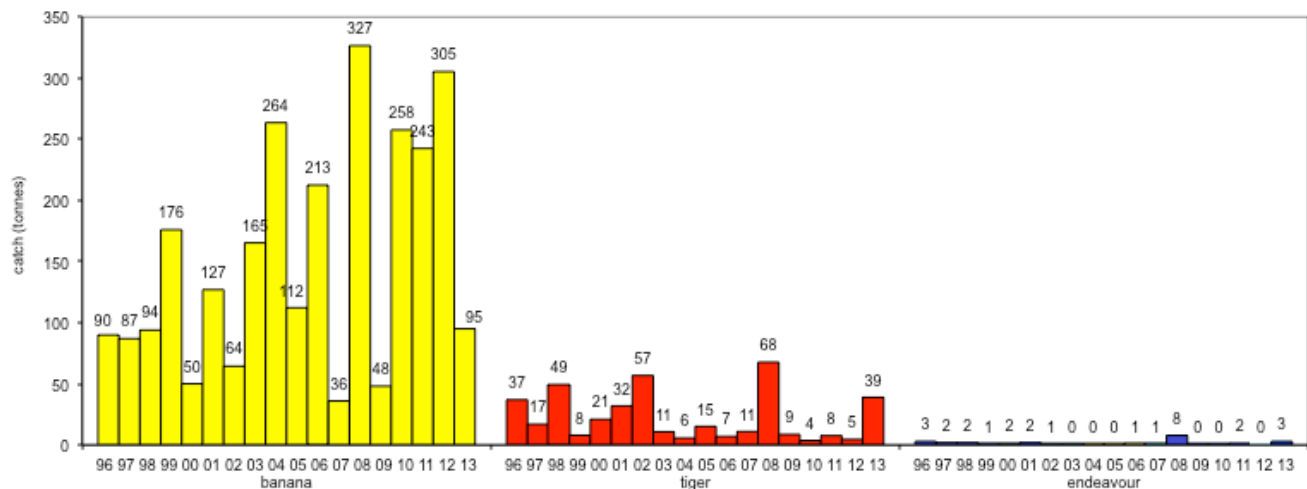
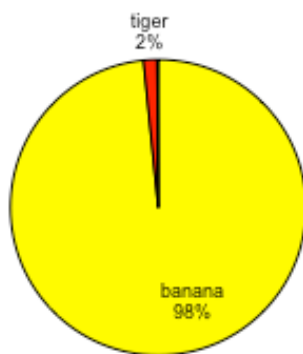


Figure 44: Catch by species in the Arnhem area between 1996 and 2013.

a)



b)

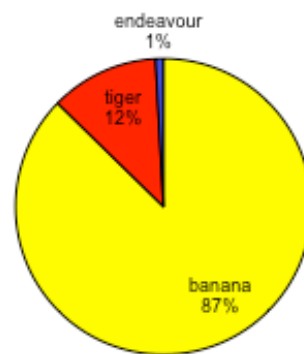


Figure 45: (a) Percentage catch of prawn species in the Arnhem area during 2013 and (b) percentage catch of prawn species in the Arnhem area from 1996 to 2013.

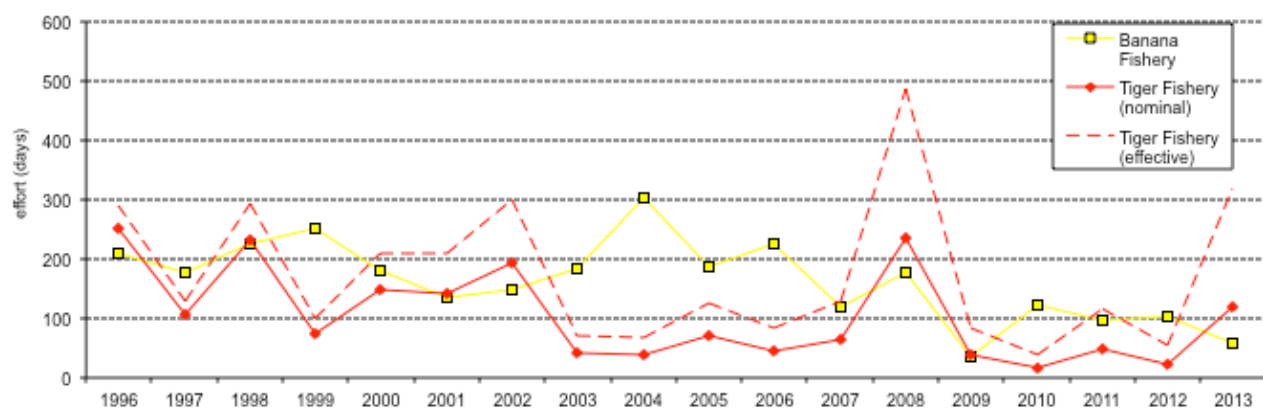


Figure 46a: Effort for the banana and tiger prawn fisheries in the Arnhem area between 1996 and 2013.

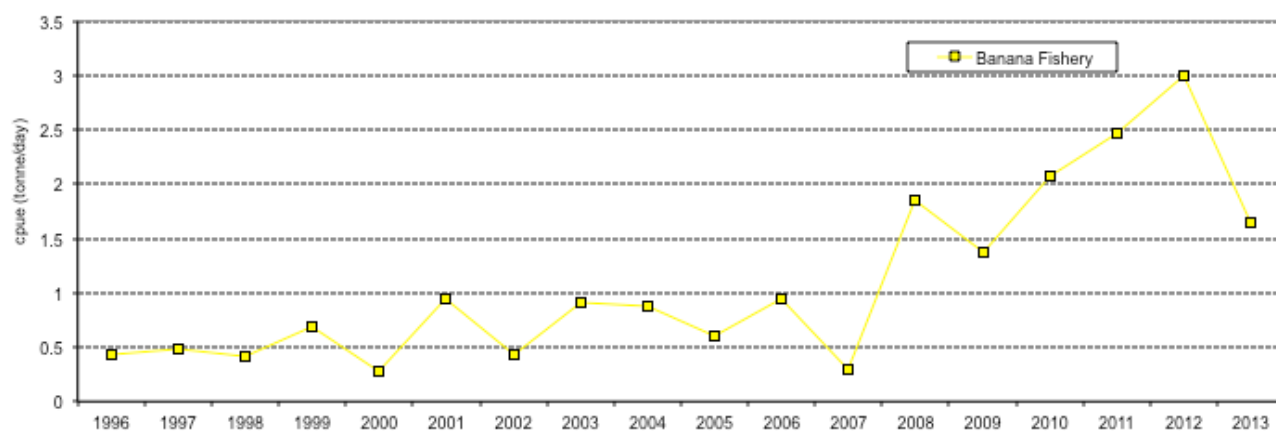


Figure 46b: Catch rate for the banana prawn fishery in the Arnhem area between 1996 and 2013.



Figure 46c: Nominal and effective catch rate for the tiger prawn fishery in the Arnhem area between 1996 and 2013.

Port Essington

Banana prawn catches in the Port Essington area decreased from 283 t in 2012 to 170 t in 2013. Tiger prawn catches increased from 38 t in 2012 to 45 t in 2013. Endeavour prawn catches increased from 18 t in 2012 to 21 t in 2013 (Figure 47). Banana prawns dominated catches in 2013, comprising 72% of prawn catches from the Port Essington area. Tiger prawns made up 19% of catches, and endeavour prawns, the remaining 9% (Figure 48).

Effort in the banana fishery decreased from 188 days in 2012 to 162 days in 2013 (Figure 49a). CPUE of banana prawns decreased from 1.545 t per day in 2012 to 1.042 t per day in 2013 (Figure 49b). Effort in the tiger prawn fishery decreased from 124 days in 2012 to 118 days in 2013 (Figure 49a). Nominal and effective CPUE of tiger prawns increased from 0.385 and 0.152 t per day respectively in 2012, to 0.568 and 0.214 t per day in 2013 (Figure 49c).

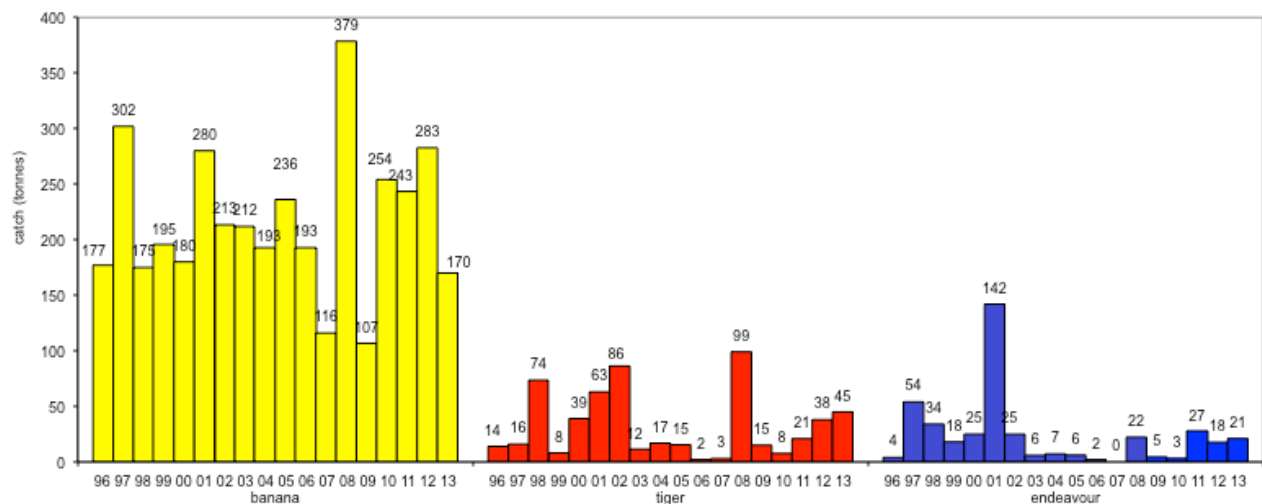
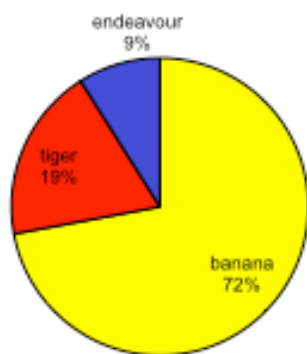


Figure 47: Catch by species in the Port Essington area between 1996 and 2013.

a)



b)

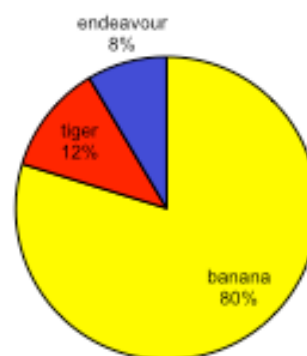


Figure 48: (a) Percentage catch of prawn species in the Port Essington area during 2013, and (b) percentage catch of prawn species in the Port Essington area from 1996 to 2013.



Figure 49a: Effort for the banana and tiger prawn fisheries in the Port Essington area between 1996 and 2013.

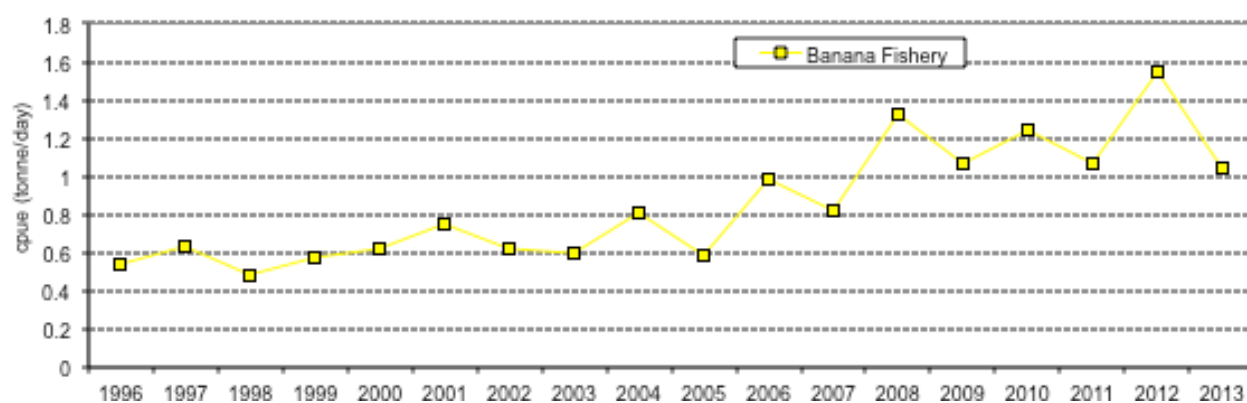


Figure 49b: Catch rate for the banana prawn fishery in the Port Essington area between 1996 and 2013.

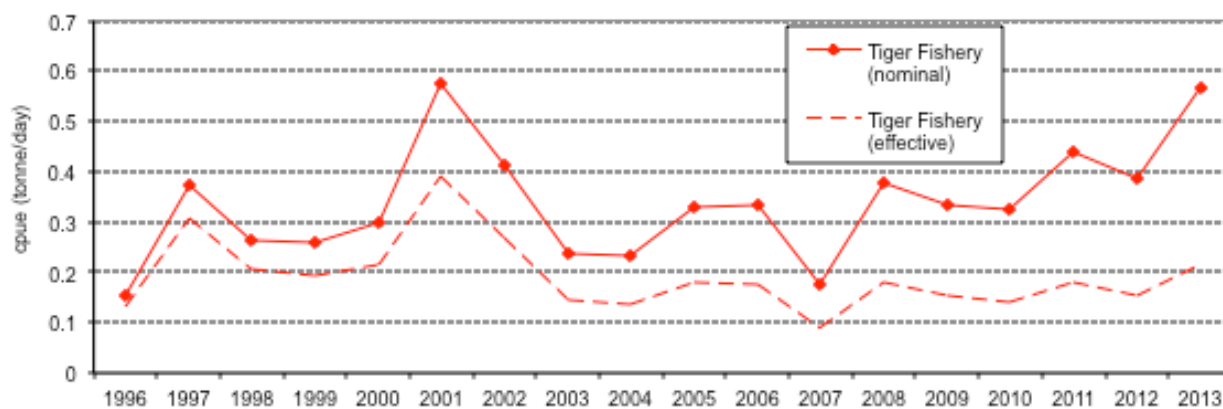


Figure 49c: Nominal and effective catch rate for the tiger prawn fishery in the Port Essington area between 1996 and 2013.

Melville

Banana prawn catches in the Melville area decreased from 370 t in 2012 to 252 t in 2013. Catches of tiger prawns went from 41 t in 2012 to 73 t in 2013. Endeavour prawn catches increased from 22 t in 2012 to 51 t in 2013 (Figure 50). Banana prawns comprised 67% of the catch in 2013, with tiger prawns making up 19%, and Endeavor prawns, 14% (Figure 51).

Effort in the banana fishery decreased from 312 days in 2012 to 227 in 2013 (Figure 52a). CPUE for banana prawns decreased from 1.209 t per day in 2012 to 1.160 t in 2013 (Figure 52b). Effort in the tiger prawn fishery increased from 147 days in 2012 to 154 days in 2013 (Figure 52a). Nominal and effective CPUE for tiger prawns increased from 0.381 and 0.151 t per day in 2012 to 0.731 and 0.275 t per day in 2013 (Figure 52c).

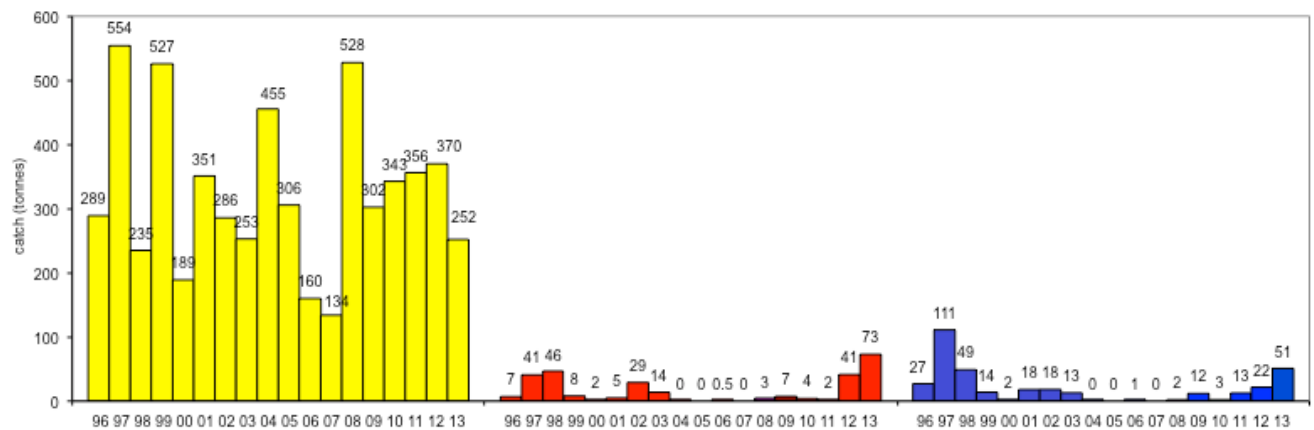
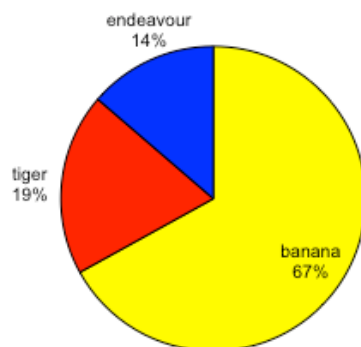


Figure 50: Catch by species in the Melville area between 1996 and 2013.

a)



b)

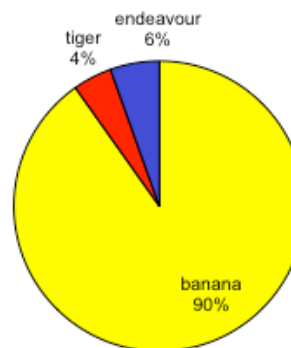


Figure 51: (a) Percentage catch of prawn species in the Melville area during 2013, and (b) percentage catch of prawn species in the Melville area from 1996 to 2013.

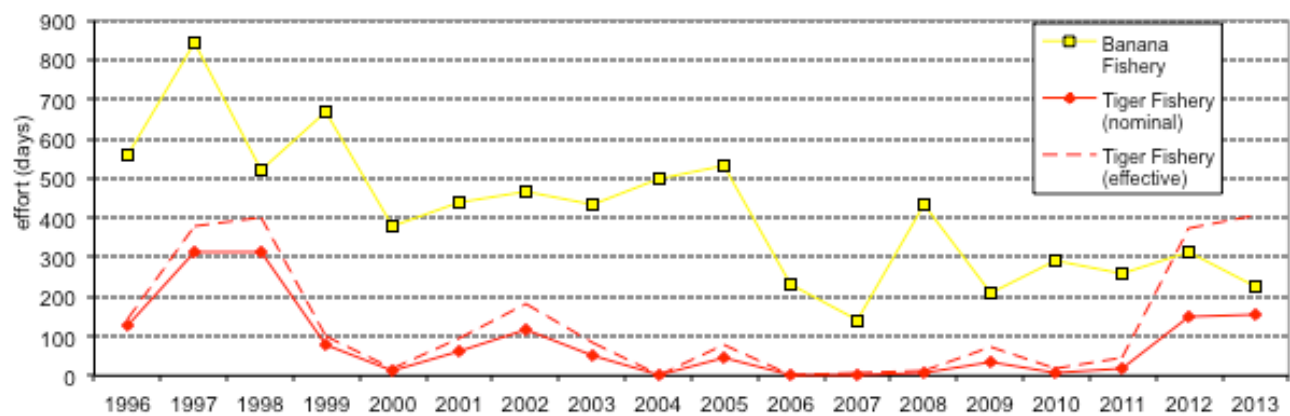


Figure 52a: Effort for the banana and tiger prawn fisheries in the Melville area between 1996 and 2013.

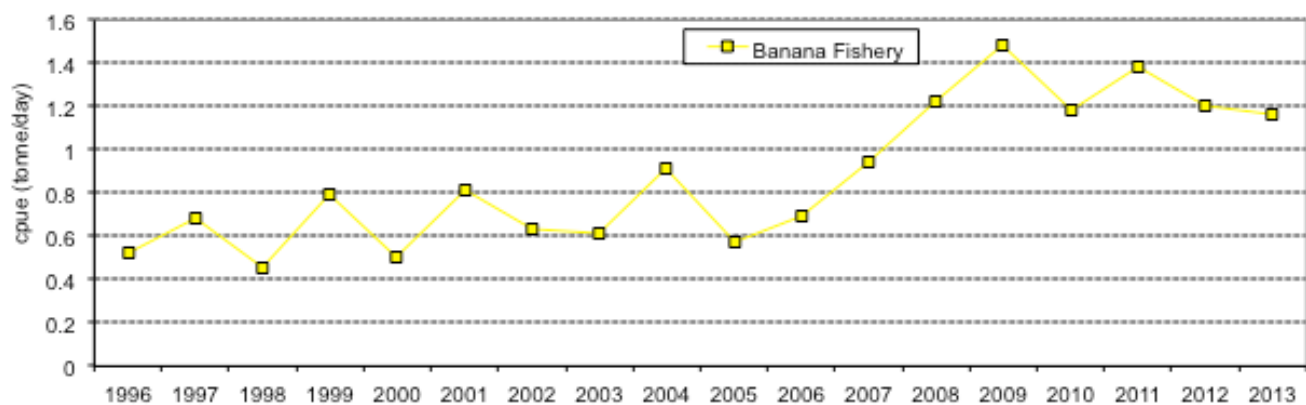


Figure 52b: Catch rate for the banana prawn fishery in the Melville area between 1996 and 2013.

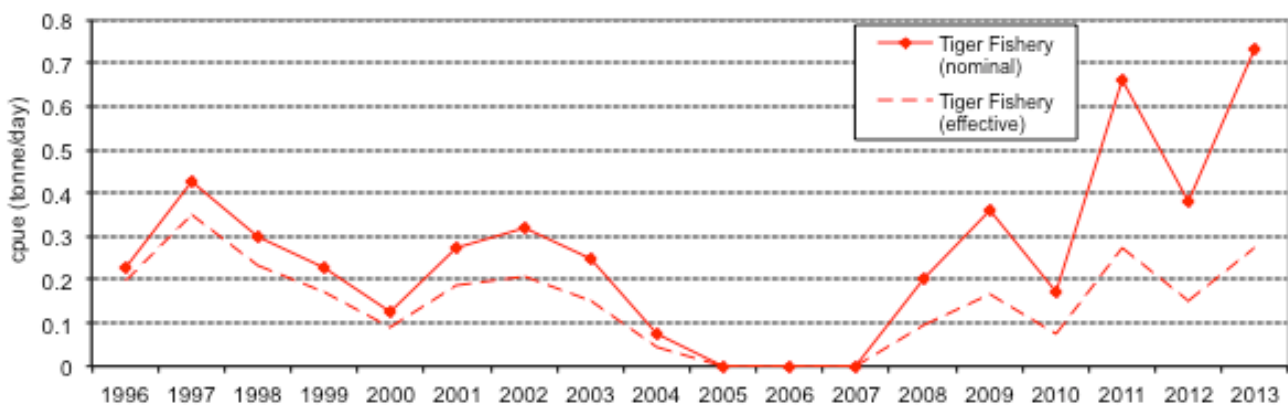


Figure 52c: Nominal and effective catch rate for the tiger prawn fishery in the Melville area between 1996 and 2013.

Fog Bay

Banana prawn catches in the Fog Bay area decreased from 233 t in 2012 to 197 t in 2013. Catches of tiger and endeavour prawns in 2013 were both <1 t, as in 2012 (Figure 53). Banana prawns comprised 100% of the catch taken during 2013 in this area (Figure 54).

Effort in the banana fishery decreased from 144 days in 2012 to 117 days in 2013 (Figure 55a). CPUE of banana prawns increased from 1.621 t per day in 2012 to 1.685 t per day in 2013 (Figure 55b). No effort was expended in the tiger prawn fishery in 2013, as in 2012 (Figure 55a). Both nominal and effective CPUE were zero in 2013 (Figure 55c).

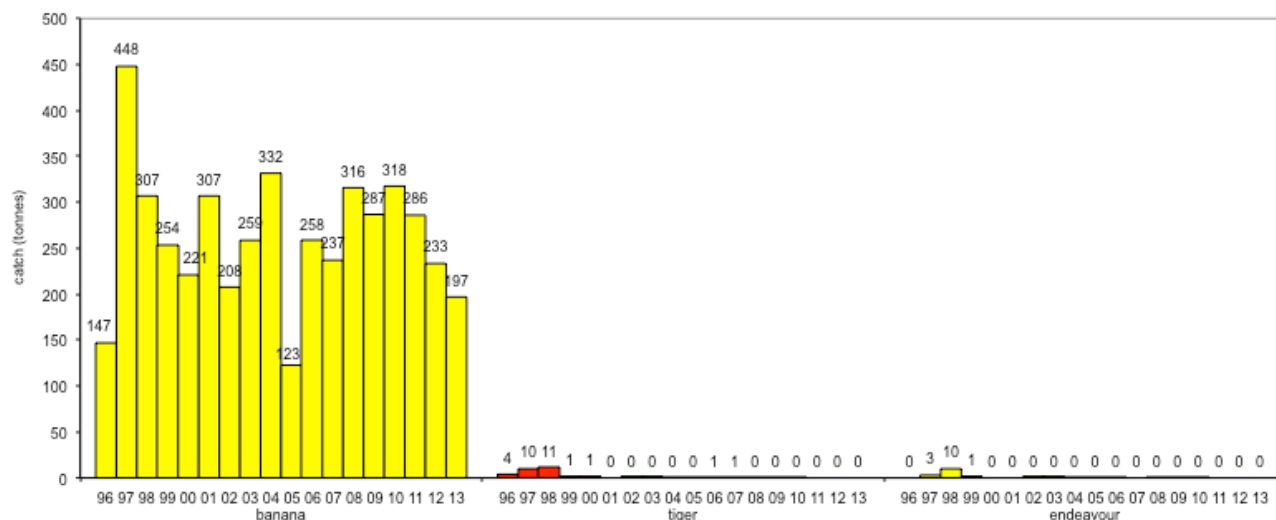
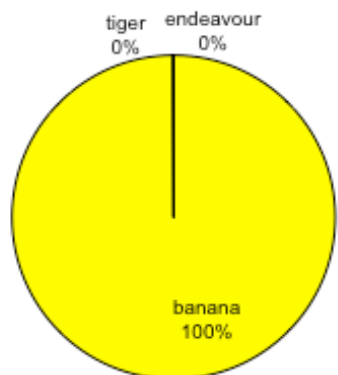


Figure 53: Catch by species in the Fog Bay area between 1996 and 2013.

a)



b)

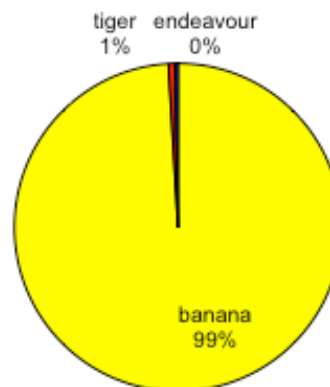


Figure 54: (a) Percentage catch of prawn species in the Fog Bay area during 2013 and (b) percentage catch of prawn species in the Fog Bay area from 1996 to 2013.

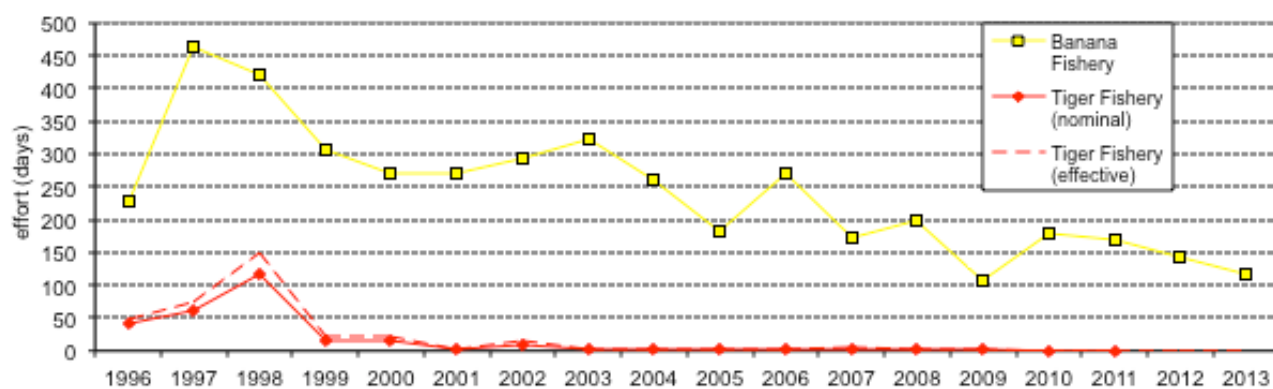


Figure 55a: Effort for the banana and tiger prawn fisheries in the Fog Bay area between 1996 and 2013.

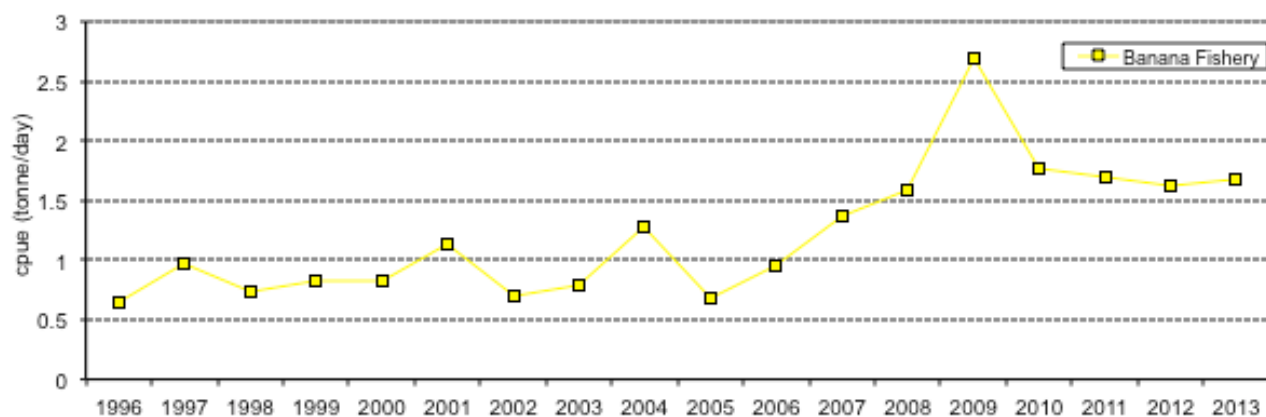


Figure 55b: Catch rate for the banana prawn fishery in the Fog Bay area between 1996 and 2013.



Figure 55c: Nominal and effective catch rate for the tiger prawn fishery in the Fog Bay area between 1996 and 2013.

Bonaparte

Banana prawn catches in the Bonaparte area increased from 195 t in 2012 to 380 t in 2013. Tiger prawn catches increased slightly from 1 t in 2012 to 3 t in 2013, and endeavour prawn catches increased from 2 t in 2012 to 4 t in 2013 (Figure 56). Banana prawns made up 100% of the catch for 2013 (Figure 57).

Effort in the banana fishery increased from 132 days in 2012 to 325 days in 2013 (Figure 58a). CPUE of banana prawns decreased from 1.499 t per day in 2012 to 1.191 t in 2013 (Figure 58b). Effort in the tiger prawn fishery increased from zero days in 2012 to one day in 2013 (Figure 58a). Nominal and effective CPUE of tiger prawns increased from zero in 2012 to 0.025 and 0.009 t per day in 2013 (Figure 58c).

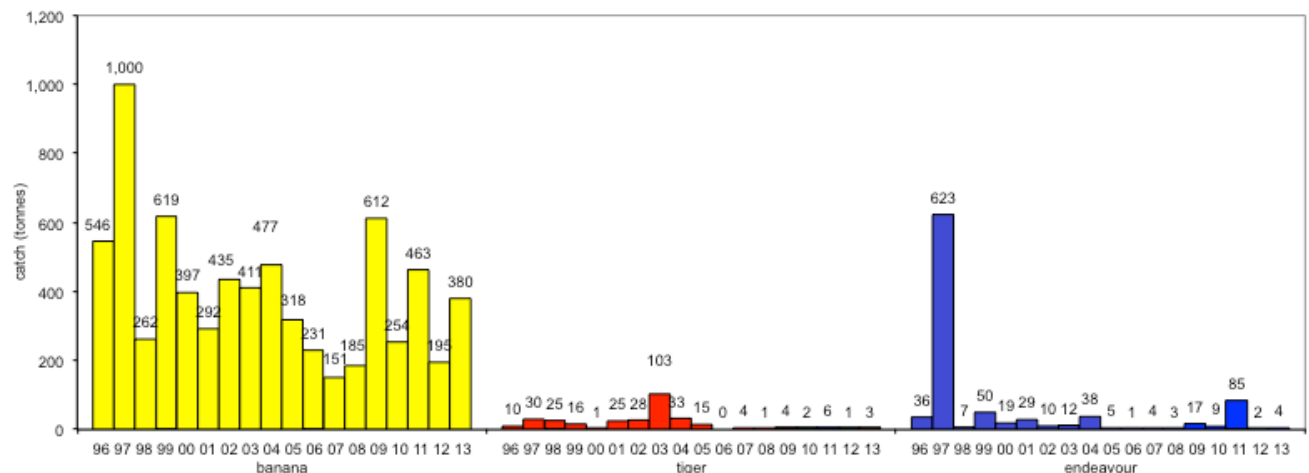
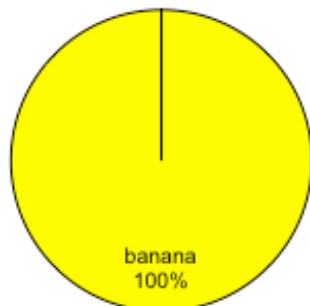


Figure 56: Catch by species in the Bonaparte area between 1996 and 2013.

a)



b)

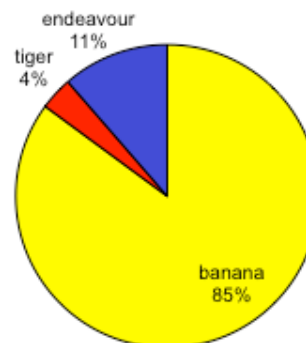


Figure 57: (a) Percentage catch of prawn species in the Bonaparte area during 2013, and (b) percentage catch of prawn species in the Bonaparte area from 1996 to 2013.

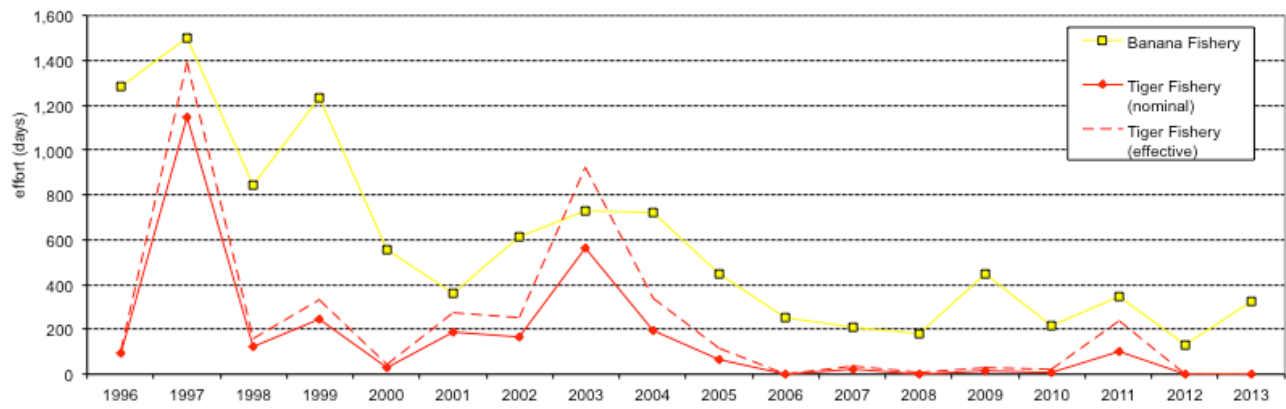


Figure 58a: Effort for the banana and tiger prawn fisheries in the Bonaparte area between 1996 and 2013.

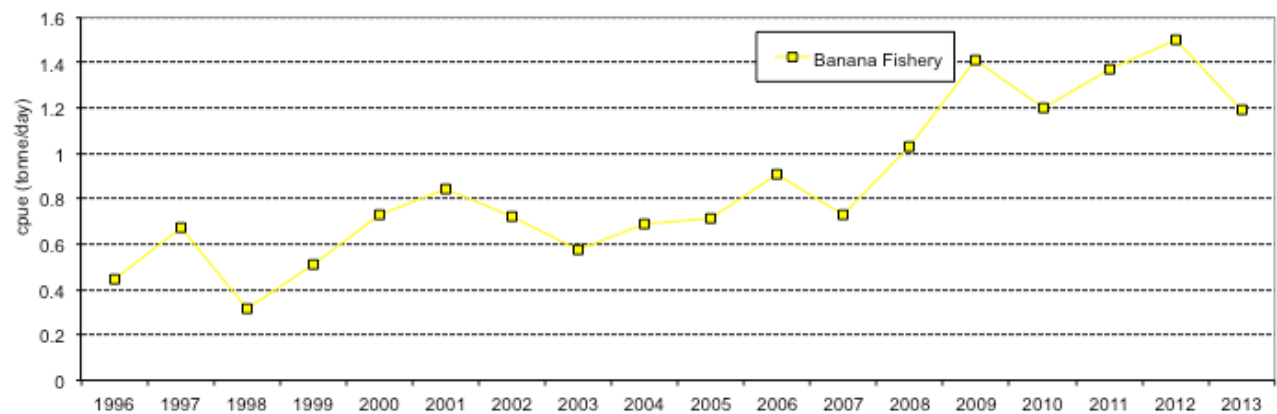


Figure 58b: Catch rate for the banana prawn fishery in the Bonaparte area between 1996 and 2013.



Figure 58c: Nominal and effective catch rate for the tiger prawn fishery in the Bonaparte area between 1996 and 2013.

Interactions with TEP species in the Northern Prawn Fishery

Turtle interactions

A total of 75 turtle interactions were reported in the NPF during 2013 (Table 5). Turtles of undetermined species were the most numerous (21 interactions) followed by Green turtles (18 interactions). Fifteen interactions occurred with Pacific Ridley turtles, 10 with Flatback turtles, 9 with Loggerhead turtles and 2 with Hawkesbill turtles (Figure 59). All except five turtles (2 Pacific Ridley turtles, 1 Hawkesbill turtle, 1 Flatback turtle and 1 turtle of unknown species) were released alive (Figure 59). Turtle interactions were highest in the Limmen Bight region, which was also one of the areas which experienced the most fishing effort (Figure 60).

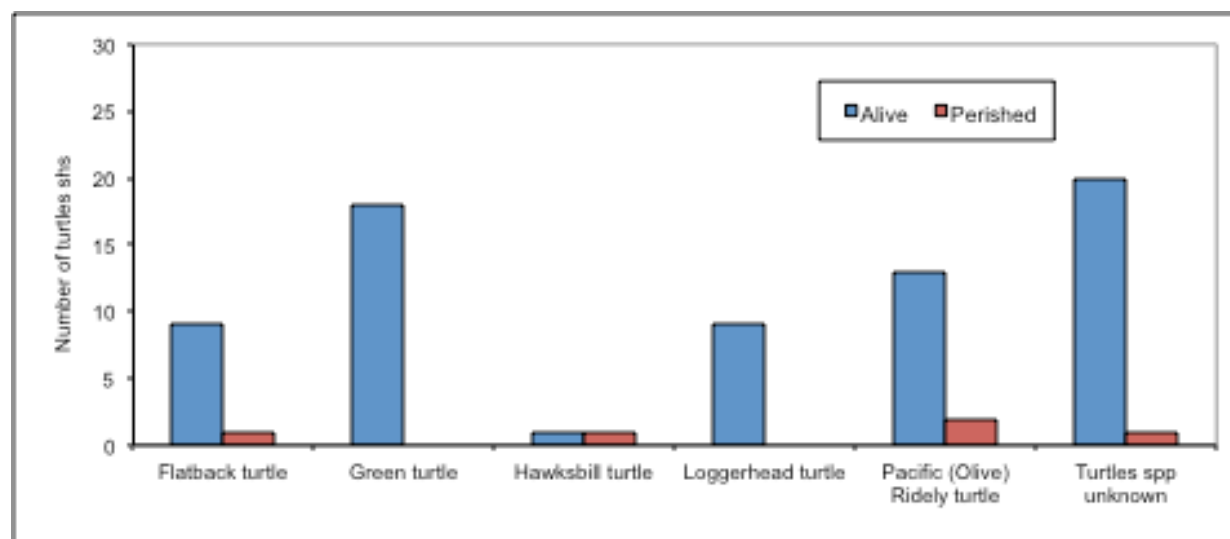


Figure 59: Turtle interactions in the NPF by species (2013).

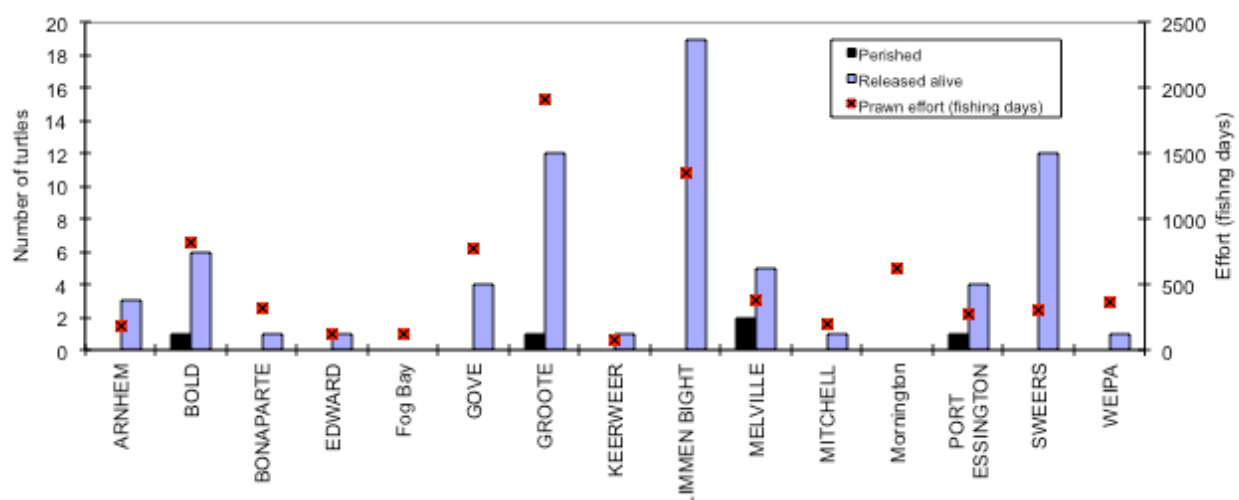


Figure 60: Turtle interactions in the NPF by area (2013).

Table 5: Turtle interactions by species, for each area between 2008 and 2013.

Statistical Area	Turtle Species	Released Alive					Perished					Condition Unknown				
		09	10	11	12	13	09	10	11	12	13	09	10	11	12	13
ARNHEM	Flatback					3										
	Green	1														
	Hawksbill	1														
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species															
BOLD	Flatback	1	1			1					1					
	Green		1		4	1										
	Hawksbill															
	Leatherback															
	Loggerhead					2										
	Pacific Ridley				1	1										
	Unidentified species	1				4										
BONAPARTE	Flatback					1										
	Green															
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species	2														
EDWARD	Flatback					1										
	Green															
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species	2														
FOG BAY	Flatback															
	Green															
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species															
GOVE	Flatback		2													
	Green			1	3	1										
	Hawksbill															
	Leatherback															
	Loggerhead					1	2									
	Pacific Ridley						1									
	Unidentified species		1													
GROOTE	Flatback		1	3	1											
	Green	1	1	1	5	5										
	Hawksbill				1											
	Leatherback															
	Loggerhead					1										
	Pacific Ridley					4	3				1					
	Unidentified species	7			8	3										
LIMMEN BIGHT	Flatback	1	2			2										
	Green	1	1		4	3										
	Hawksbill					1										
	Leatherback															
	Loggerhead					2										
	Pacific Ridley		5		1	2										
	Unidentified species	9	2	1		9		3								
MELVILLE	Flatback															
	Green				1											
	Hawksbill										1					
	Leatherback															
	Loggerhead															
	Pacific Ridley					4					1					
	Unidentified species	1				1	1									
MITCHELL	Flatback															
	Green		3													
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley					1										
	Unidentified species	1														
MORNINGTON	Flatback				2											
	Green	4	1	4	8											
	Hawksbill															
	Leatherback															
	Loggerhead															

Statistical Area	Turtle Species	Released Alive					Perished					Condition Unknown				
		09	10	11	12	13	09	10	11	12	13	09	10	11	12	13
	Pacific Ridley	1	1		1											
	Unidentified species	7			3											
PORT ESSINGTON	Flatback				2	1										
	Green				1	3										
	Hawksbill															
	Leatherback															
	Loggerhead															
	Pacific Ridley															
	Unidentified species	1									1					
SWEERS	Flatback															
	Green				2	5										
	Hawksbill				1											
	Leatherback															
	Loggerhead				3	3										
	Pacific Ridley					1										
	Unidentified species				2	3										
WEIPA	Flatback				1											
	Green		4													
	Hawksbill															
	Leatherback				1											
	Loggerhead					1										
	Pacific Ridley															
	Unidentified species	2			1											
TOTAL ALL AREAS	Flatback	2	6	3	6	9					1					
	Green	7	11	6	28	18										
	Hawksbill	1			2	1					1					
	Leatherback				1											
	Loggerhead				6	9										
	Pacific Ridley	1	6		7	13					2					
	Unidentified species	30	4	1	14	20	1	3			1					
GRAND TOTAL	ALL SPECIES	41	27	10	64	70	1	3	0	0	5	0	0	0	0	0

Sea snake interactions

A total of 8,354 sea snake interactions were recorded during 2013 (Table 6). This is an increase of 685 compared to 2012 (7669 sea snakes). In 2013, the majority of sea snakes (6,382 individuals, representing 76% of the total) were released alive. 1104 (13%) perished, 120 (1%) were released injured, and 748 (9%) of sea snakes caught were released with condition unknown (Table 6). Sea snake interactions were higher in the Groote area (1,579 individuals), followed by Limmin Bight (1372 individuals), and lowest in Fog Bay (67).. The percentage of sea snakes released alive in 2013 (76%) was lower compared to 2012 (82%).



Table 6: Sea snake interactions by area in the NPF (2013).

Statistical area	Released alive	Perished	Released injured	Condition unknown	Total
ARNHEM	174	40	15		229
BOLD	794	63	7	111	975
BONAPARTE	359	63	5	9	436
EDWARD	102	4	2		108
FOG BAY	57	9		1	67
GOVE	268	50		87	405
GROOTE	1165	184	11	219	1579
KEERWEER	60	13	2		75
LIMMEN BIGHT	1048	131	6	187	1372
MELVILLE	607	204	40		851
MITCHELL	154	21	4	14	193
MORNINGTON	363	25		12	400
PORT					
ESSINGTON	434	86	26		546
SWEERS	265	20		1	286
WEIPA	532	191	2	107	832
Total	6382	1104	120	748	8,354

Scientific Observer and Crew Member Observer coverage

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

In 2013, the number of fishing days from logbook returns (7,842 days) was a slight increase compared to 2012 (7690 days). The number of days observed by CMOs increased from 962 in 2012 to 1038 in 2013. The number of days observed by Scientific Observers was similar in 2013 compared to 2012, at 168 days, compared to 167 days in 2012.

The frequency of interactions with seasnakes reported within CMO and Scientific Observer datasets were similar (1.264 and 1.26 respectively), but slightly lower in logbook data (1.068). The frequency of turtle interactions reported were similar in logbook and Scientific Observer datasets (0.010 and 0.012 respectively), and higher in the CMO dataset (0.029). Reported frequency of Syngnathid interactions was similar in Scientific Observer and CMO datasets (0.196 and 0.227, respectively), and lower in logbook data (0.018). Sawfish interaction frequencies reported in logbook, CMO and Scientific Observer datasets were similar at 0.080, 0.066 and 0.071 (Table 8).

A continued increase in the volume of data collected by CMOs was noted, which is likely to be a result of a revitalised incentive program implemented by NPF SFR holders for meeting targets for verified data collection.

Table 7: Comparison of TEP species interactions reported by Scientific Observers, CMOs and in logbooks in the NPF during the 2013 tiger prawn season.

	Vessel Returns	Fishing Days	Total Sea Snakes	Total Turtles	Total Syngnathids	Total Sawfish	Dolphins
Logbook Returns	53	7842	8376	75	141	630	3
Crew Member Observers	12	1038	1312	30	236	69	1
Scientific Observers*	10	168	212	2	33	12	0

*Days fishing practices were observed.

**Scientific observer data 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 2013 tiger prawn season.

	Sea Snakes per Fishing Day	Turtles per Fishing Day	Syngnathids per Fishing Day	Sawfish per Fishing Day
Logbook Returns	1.068	0.010	0.018	0.080
Crew Member Observers	1.264	0.029	0.227	0.066
Scientific Observers*	1.262	0.012	0.196	0.071

*Scientific observer data include data collected during gear trials.

State/Territory specific data

Total prawn catch in Queensland (QLD) managed fisheries decreased in 2012/13, from 3,232 in 2011/12 to 2,012 in 2012/13. Prawn catches in Western Australia (WA) also decreased from 4,484 t in 2012 to 252 t in 2013. Total prawn catch was constant in the Northern Territory (NT) at 1,230 in 2012/13, as in 2011/12.

Banana prawn catch decreased in QLD from 3,181 t in 2011/12 to 1,817 t in 2012/13. Banana prawn catch also decreased in the NT from 1,224 t in 2011/12 to 704 t in 2012/13. Banana prawn catch in WA also decreased from 4,426 t in 2011/12 to 247 t in 2012/13 (Table 9).

Tiger prawn catches increased in QLD, from 49 t in 2011/12 to 186 t in 2012/13. Tiger prawn catches also increased in the NT from 3 t in 2011/12 to 10 t in 2012/13, but decreased in WA, from 52 t in 2011/12 to 3 t in 2012/13.

Catches of both endeavour prawns were 8 t in QLD, 3 t in NT and 2 t in WA (Table 9).

Table 9: Prawn catch by State/Territory from 1990/91 to 2012/13 financial years.

State	Financial Year	Banana (t)	Tiger (t)	Endeavour (t)	King (t)	Total Catch (t)
Queensland	1990/91	4,646	1,151	269	51	6,117
	1991/92	1,392	1,710	548	30	3,680
	1992/93	1,857	968	357	18	3,200
	1993/94	904	1,032	416	8	2,360
	1994/95	2,540	1,883	346	24	4,793
	1995/96	2,562	1,570	761	23	4,916
	1996/97	2,050	1,259	817	15	4,141



State	Financial	Banana (t)	Tiger (t)	Endeavour (t)	King (t)	Total Catch
	1997/98	1,986	1,318	878	11	4,193
	1998/99	1,548	634	335	5	2,522
	1999/00	637	629	348	1	1,615
	2000/01	3,651	553	352	4	4,560
	2001/02	3,286	372	211	1	3,870
	2002/03	1,307	97	54	1	1,459
	2003/04	1,639	152	14	0	1,805
	2004/05	1,700	70	7	0	1,777
	2005/06	1,384	217	46	9	1,656
	2006/07	1,839	192	46	8	2,085
	2007/08	3,578	126	32	8	3,744
	2008/09	3,858	8	0	0	3,866
	2009/10	2,952	17	0	0	2,969
	2010/11	5,388	3	0	0	5,391
	2011/12	3,181	49	2	0	3,232
	2012/13	1,817	186	8	1	2,012
Northern Territory	1990/91	1,430	2,156	380	46	4,012
	1991/92	669	2,332	434	27	3,462
	1992/93	1,639	1,907	437	18	4,001
	1993/94	697	1,768	403	18	2,886
	1994/95	1,536	1,855	423	19	3,833
	1995/96	1,072	1,615	434	6	3,127
	1996/97	1,472	1,184	387	9	3,052
	1997/98	1,241	1,466	490	9	3,206
	1998/99	1,549	2,141	778	6	4,474
	1999/00	1,247	1,564	586	11	3,408
	2000/01	2,323	1,546	489	3	4,361
	2001/02	1,789	1,561	892	1	4,243
	2002/03	1,509	1,797	333	2	3,641
	2003/04	1,437	1,985	390	1	3,813
	2004/05	838	1,683	368	2	2,891
	2005/06	1,495	1,587	316	19	3,417
	2006/07	783	1,582	304	19	2,688
	2007/08	1,550	1,100	164	12	2,826
	2008/09	930	1	0	0	931
	2009/10	1,868	4	3	0	1,875
	2010/11	1,447	0	1	0	1,448
	2011/12	1,224	3	3	0	1,230
	2012/13	704	10	3	0	1,230
Western Australia	1990/91	579	86	42	0	707
	1991/92	231	8	11	0	250
	1992/93	498	5	6	0	509
	1993/94	828	4	13	0	845
	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



State	Financial	Banana (t)	Tiger (t)	Endeavour (t)	King (t)	Total Catch
	2004/05	293	29	36	0	358
	2005/06	231	0	1	0	232
	2006/07	108	190	0	0	298
	2007/08	151	5	4	0	160
	2008/09	72	0	0	0	72
	2009/10	0	0	0	0	0
	2010/11	117	0	0	0	117
	2011/12	4,426	52	5	0	4,484
	2012/13	247	3	2	0	252

Retained Byproduct in the Northern Prawn Fishery by State/Territory waters

Total byproduct retained in the NPF by State/Territory in 2013 was 151,427 kg, with highest retained byproduct levels observed in NT waters, and lowest in WA waters. Moreton bay bugs were the largest component of byproduct catches, with 71,603 kg retained, up 50% on 2012, in which year 47,493 kg of bugs was retained (Table 10).

Table 10: Retained byproduct in the NPF by State/Territory in 2013 (kilograms).

Species	NT	QLD	WA	Total
Australian scampi	17,177			17,177
Bugs - Shovel nosed and slipper lobsters	15,543	21,530		37,073
Champagne lobster - Spear lobster	2,206			2,206
Commercial scallop				0
Coral prawns			117	117
Cuttlefishes	2,303	2,465	5	4,773
Diamondscale mullet				0
Golden snapper - Fingermark seaperch	10			10
Herring				0
Mangrove Jack	37			37
Mixed fish				0
Moreton Bay bugs	30,558	40,620	425	71,603
Mud scallop				0
Octopuses	155	188		343
Pilchard				0
Pomfret	145	10		155
Saddle-tailed seaperch - Crimson seaperch	13			13
Scallops	1,308	1,315		2,623
Sea mullet	10			10
Squids	6,840	7,668	10	14,518
Sweetlips	15			15
Whittings	637	117		754
Total	76,957	73,913	557	151,427